

The Iron Age

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A Review of the Hardware, Iron and Metal Trades.

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The McKenna Direct-Acting Gas Furnace.

The all-absorbing question before iron and steel manufacturers outside of the natural gas region is, and has been for the past few years, either to introduce some system working that would enable them to compete with that matchless fuel, or to remove their works to the immediate vicinity of the gas fields. The first part of the problem has been tried, with indifferent success, by some manufacturers, and others have invested their capital in and around Pittsburgh, while several of the largest concerns in the country have been over the ground, with a view of removing their works. Our illustration, which represents the McKenna direct draft melting, heating and puddling furnace, has a bearing on this subject worthy the attention of those contemplating the erection of costly gas furnaces, to supplant their present coal furnaces, which are so wasteful of both fuel and material. The furnace shown was first introduced at the Soho Mills, Pittsburgh,

of furnace, in the space formerly used as an ash pit, and the gas and air-heating chamber put in position directly over the furnace. The hot gas direct from the producer, being still further heated by the gas flue passing through heating chamber, passes upward into the gas flue at A and enters the furnace highly heated at B. The cold air under pressure enters the air-pipe in the heating chamber at F and goes into the furnace, also highly heated, at H, directly over and in front of the incoming column of gas, into which the air is forced after thorough mixture. Combustion is produced at a temperature equalled only by the Siemens furnace. The products of combustion then pass over the bridge wall to the working bed of the furnace, and on to the opposite end, where the waste heat is carried upward by two flues into the heating chamber over the furnace. There it heats both the gas and air pipes, passing then by the flue at D and entering the stack at E.

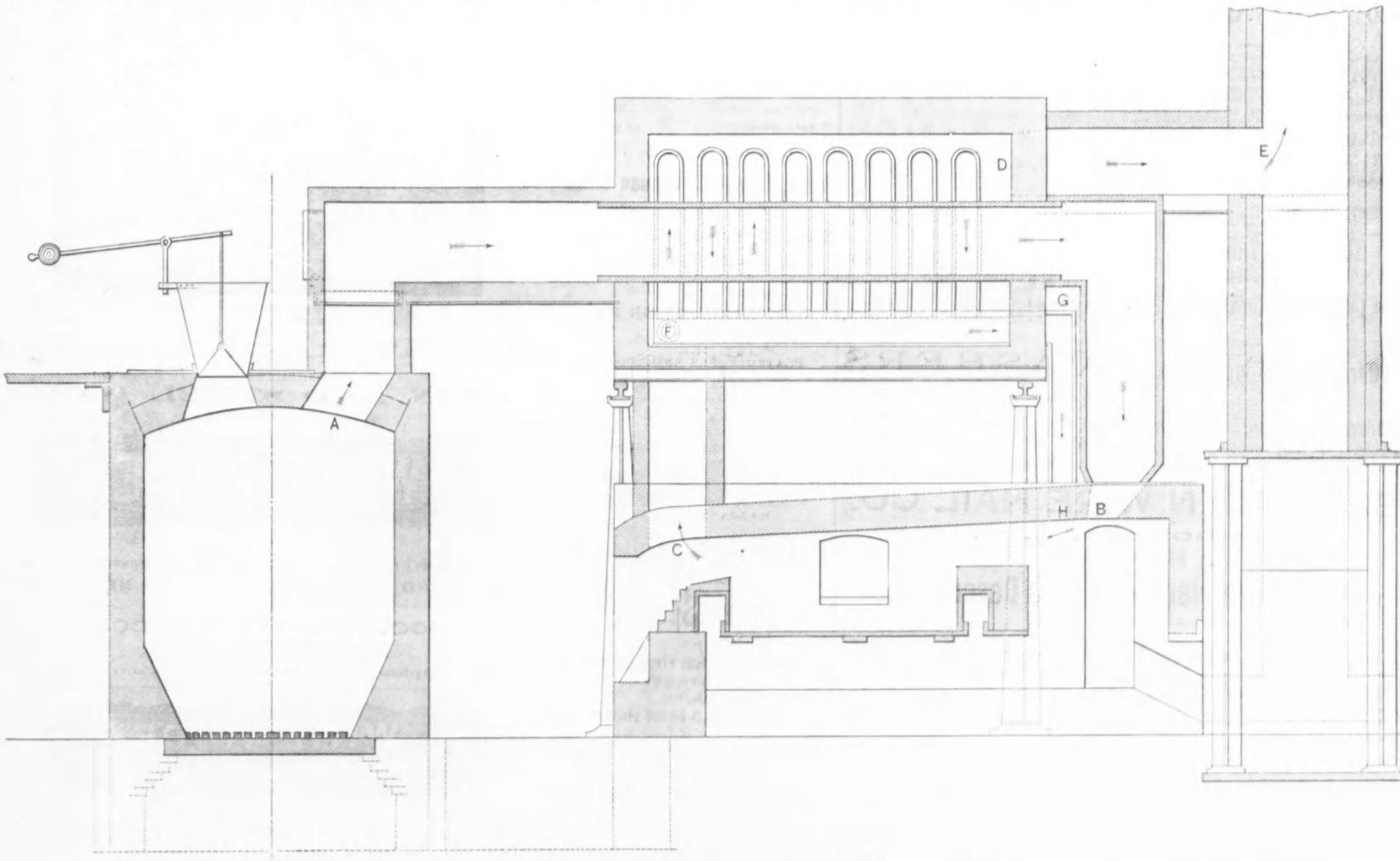
A chamber for the collection of soot is provided for under the gas entrance to the furnace and behind the bridge wall, from

fraudulent and illegal use of power as well as for the purpose of clearly and definitely defining the rights of both sides. But these laws were found to be far too stringent to suit the views of the monopolist pure and simple, the man who pursues the dollar for the purpose of capturing and holding it for his own, regardless of the rights and claims of others, and hence the ingenious device of what is to-day known as a "Trust" has been invented, and the very general adoption of the system shows how well adapted it is to the wants of those for whom it was devised. A Trust is nothing else than an attempted evasion of all legal restriction, an effort to avoid and get rid of all legal responsibility. It is ostensibly created with the avowed object of regulating production, harmonizing competition, placing invested capital in a position to become remunerative by the exercise of greater economy, the guaranteeing to the public standard quality, steadiness of prices, and to eliminate the many evils that arise from keen competition. But it may be asked has it thus far fulfilled these avowed objects in any one instance, and

is in constant competition with more powerful establishments. Their accession to the trust increases its power, and gradually it continues to absorb first those that willingly come in, then brings pressure to bear upon those that hang fire and finally proceeds to freeze out those that resist and show fight. That has been the history of the completion of the famous Cotton Oil Trust, and such must be the history of the formation of every other trust of a similar kind. Its relation to capital is not unlike that of the various labor organizations to labor. In the latter case, however, combination has been the instrument of warfare which wage earners have used from the earliest times, while combinations among manufacturing concerns and the trust system are of comparatively recent date. In fact, with one exception, that of the Standard Oil Company, all the various trusts have sprung into existence within the past two years, and we now have either in practical operation or in course of formation trusts that are to control and monopolize the manufacture of cotton seed oil, whisky, linseed oil, gas, india rubber

Preventing Noise on Railway Bridges.

The Government managers of the new city elevated railway in Berlin, says the *American Architect*, have, according to *La Semaine des Constructeurs*, taken a great deal of pains to diminish the noise of trains passing over the viaducts and bridges, which, of course, form the principal portion of the road. Wherever possible, the viaducts are built of brick or stone, and the sound of the light trains running over these is not very annoying; but arches of masonry cannot well be used in crossing crowded streets, and the metallic structures employed in such places rattle and reverberate in a manner which is considered very suitable to the nerves of the people of New York, but which the Germans are not disposed to endure. In experimenting to find means for overcoming the trouble, it is found that the form of the bridge does not perceptibly affect the noise from it, a lattice truss, notwithstanding the multiplicity of joints, producing no more sound than a plate girder; but the length is a very important factor,



THE MCKENNA DIRECT-ACTING GAS FURNACE.

in 1885, being applied to plate-heating and scrapping. Then two single puddling furnaces were taken down, made a little wider, had chill plates and a bottom of Massillon sand put in them, when they were started up and worked regularly for a period of about six months. They produced hundreds of tons each of both pig and scrap and pig and ore open-hearth steel, the carbon ranging from 0.08 to 0.20, making at times three heats in 22 hours, and being the only direct-draft furnaces that had succeeded in accomplishing what had hitherto been done only by the Siemens reversing furnace. The furnaces, however, were too small (5000 to 6000 pound-charges) to compete with larger ones running with 15 to 30 tons per heat, and had also some minor defects, which have been overcome in the present furnace, which is the design of McKenna, Ryan & Son, Pittsburgh. Three steel melting furnaces built on this plan—one of 10, one of 15, and one of 20 tons capacity—are now working at the Government Arsenal, Woolwich, England, with a fuel consumption of only 5.18 cwt. of coal per ton of ingots made, and a furnace loss of material of 6 per cent.

The principle can be applied to any of the old style of furnaces, except those having boilers placed over them, as is the case in some Eastern mills. Its mode of operating is as follows: The working bridge is taken from its present position at the grate end of the furnace and placed at the opposite end, or, what is now the neck. A Siemens, Wilson or Wellman gas producer is put at the end

which it is taken by the flue, shown in dotted lines, through the bottom of the stack. A door is also placed in the uptake on top of the gas producer, directly in front of the gas flue, which enables the gas maker to introduce a steam, or air blast to clean the flue when necessary. The entire operation is simple and effective, under good control, and can be applied at a comparatively small cost to iron mills, copper and brass works, glass works, &c.

Trusts.

The New York *Shipping and Commercial List* prints the following:

The tendency of the times toward the organization of "Trusts," for the purpose of transforming industrial enterprise into a huge monopoly, is neither a healthy nor encouraging sign, so far as our commercial and industrial prosperity as a nation is concerned, and it is time to hold out the danger signals, and cry, halt! The aggregation of capital for the purpose of carrying on large enterprises is not only necessary but beneficial; how else could the resources of this great country have been developed, her railroads built, her mines explored, and her enormous industries built up? To provide for such, the State has enacted laws governing the formation and operation of limited partnerships and corporations. The provisions of these laws have been the result of experience, and they have been drawn for the protection of the public against the

has it not rather practically resulted in benefiting those around whom the encircling arms of the Trust have been folded at the expense and to the detriment of the public. Kept within its legitimate design the prosecution of business under the Trust system can be made beneficial to all concerned, but the abuse of that power in every form becomes the keynote of its management and the inspiration of its life and success. The enormous financial success of the Standard Oil Company set the example and fashion of this rage for "Trusts" and the grasping policy with which that monopoly has been managed is a fair sample of the way in which the majority of Trusts are likely to go, no matter how fair the promise with which they are inaugurated and the high character of those who stand as sponsors. Why, the very manner in which they are formed is of itself a sufficient condemnation of the system.

Take any single industry that has or is now passing into the trust system and what has been the *modus operandi*? Several wealthy and powerful firms or companies resolve to form a trust; they announce their determination to others engaged in the same industry and offer to let them into the charmed circle under stipulated terms and conditions. The small fry, recognizing that resistance would be useless and only result in their own destruction, readily accept the terms offered; it makes for them a good investment, relieves them from anxiety and the annoyance of conducting a business that

goods, straw boards, salt and sugar. Then there are land trusts, cattle trusts, street railway trusts and coal trusts. That they are revolutionizing the methods of conducting business it is scarcely necessary to point out, for it makes every interest to which they are related tributary to their power and dictation. It destroys what in commercial parlance is termed a market for raw material, for there is but one buyer, it effectively kills competition, which is the life of trade, it places the consumer at the mercy of the monopolist, who in measure dictates his own terms. The tendency of this new departure is pernicious, it threatens evil to the community, and some remedy must be found and applied. Shall individuals and corporations, who are legally responsible for the way in which they conduct business, be allowed to hand all their interests over to trustees, and thus defeat the purposes of charters under which they operate? The people must see to it, through their legislatures, that this new form of monopoly is placed under proper restrictions and brought within the pale of the law. If they do not, it will only be a question of time until they are taxed the most exorbitant prices for the most common and necessary articles of daily use.

The length of telegraph lines in the Krupp works at Essen, Germany, is given as 70 km. (about 42 miles). There are in the works also 40 telegraph stations and 60 Morse instruments.

so much so that the noise is considered by the German engineers to be directly proportional to the span of the bridge. Where the rails rest on wooden cross-ties, or on timbers running longitudinally, the sound is less than where they are secured directly to the metal, and it may be still further diminished by placing cushions of felt or rubber under the timbers before bolting them to the bridge construction.

To cover an iron bridge entirely with planking does not appreciably diminish the noise from it unless the planking is covered with gravel, a thin layer of which has a marked deadening effect, while still more improvement is obtained by thickening the layer of gravel about the track so as to bury the cross-ties or longitudinal timbers on which the rails rest. Profiting by these suggestions, the Berlin engineers have adopted two different systems for diminishing the noise of trains on their viaducts. One is to bolt to the bridge structure long troughs of sheet iron, about 16 inches wide, so arranged that a rail will come in the center of each. The troughs are then filled with gravel, in the middle of which is buried the longitudinal timber carrying the rail, and the space between the troughs is covered with iron plates on which is spread a thin layer of gravel. The second method, which is found to be more efficient than the other, consists in placing a continuous series of shallow iron troughs, about 5 feet square, along the line of the tracks. These are filled with gravel, on which the ties and rails are laid.

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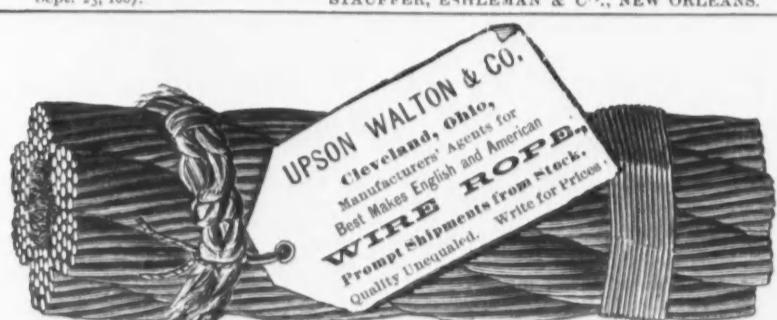
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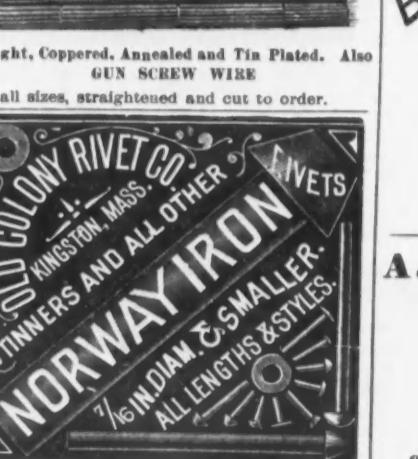
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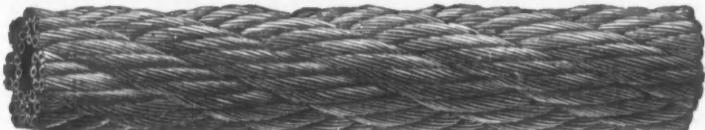
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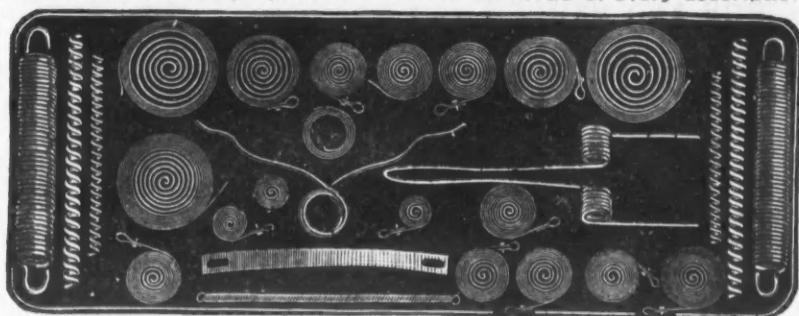
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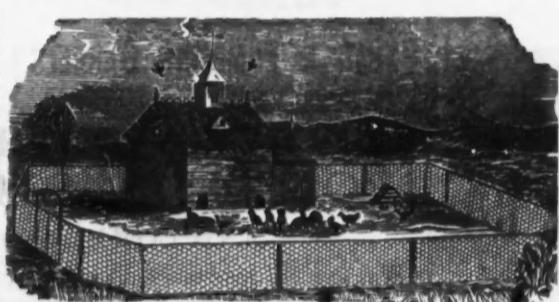
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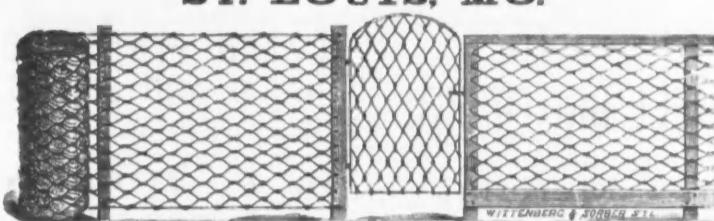
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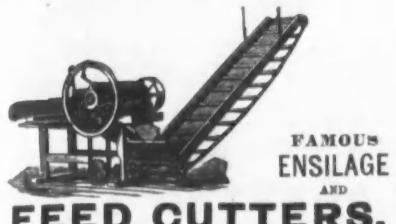
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Fig. 190.



Fig. 199.



Fig. 7a.



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Fig. 381.

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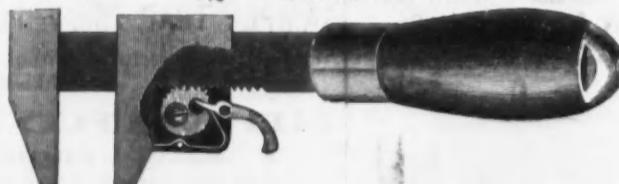
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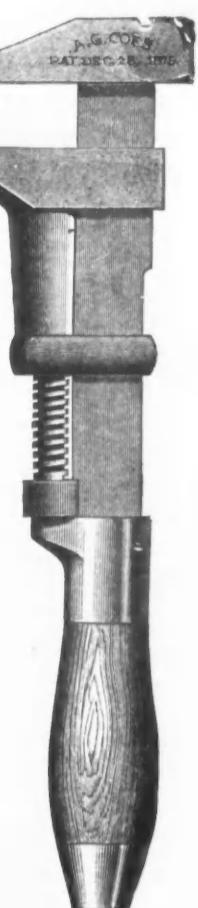
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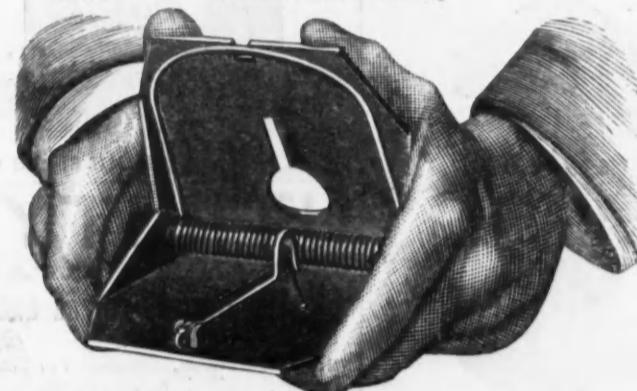
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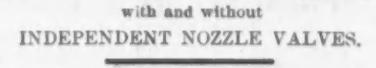


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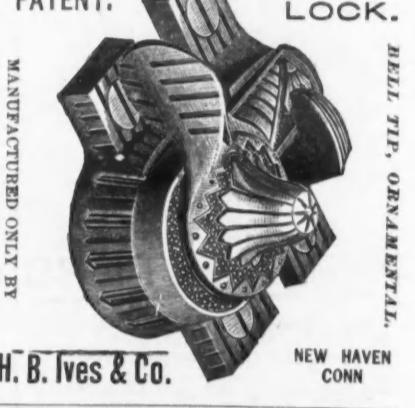
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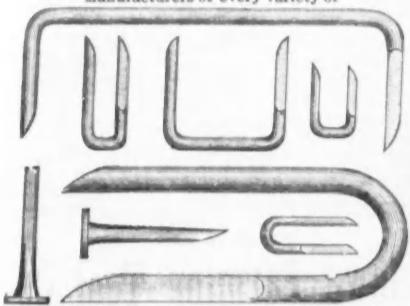


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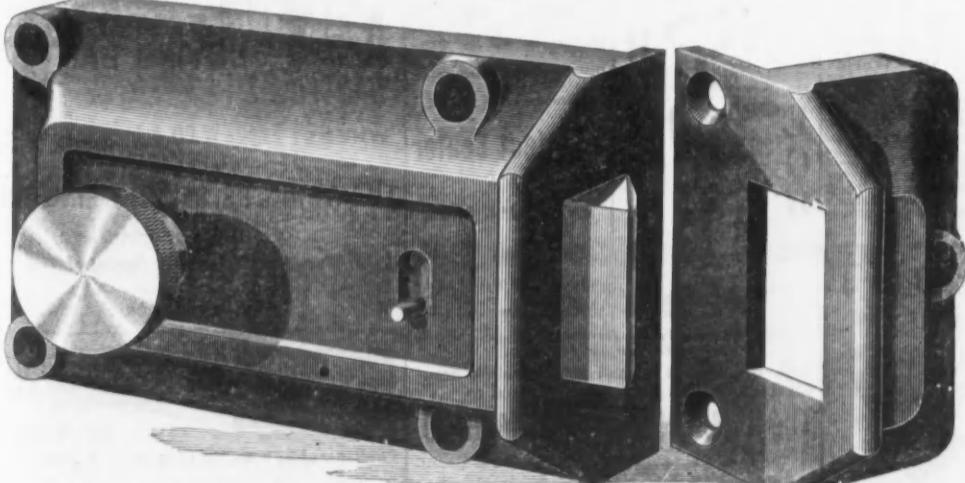
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Contributions to the literature of metallurgy in the United States, that we have looked forward with more than ordinary interest to the volume now issued. We may confess that, while it has come fully up to expectations in some respects, it is a disappointment in others. The book is well equipped, but the proof reading is not up to the mark.

FRANCE.

PARIS, October 1, 1887.—Metals.—Have been quiet and steady, with an improvement in Tin and Spelter. We quote: Copper,—Chili Bars, 104 @ 107.50; Ingots and Slabs, 109; Best Selected, 115, and Pure Corocoro Ore, 107.50. Tin,—Banca, 290; Billiton, 279.50; Straits, 274, and English, 275. Lead, 90.50 @ 91.25, and Spelter, 41.50 @ 42. Iron—in this market the demoralization continues. A large lot of Beams asserted to have been parted with at below 11 francs, though the quotation in the market remains 12, and Iron Merchant, 13. Old Rails are barely sustained at 8 francs, all of 100 kg. Charleville reports a brisker state of affairs—but complains of unremunerative rates. The Haute-Marne is, on the contrary, stagnant, with Coke Merchant at nominally 13 @ 13.50. At St. Dizier the market is steady; at Longwy, the Steel works continue busy.—*Moniteur des Matériaux*.

BELGIUM.

BRUSSELS, October 1, 1887.—Iron.—The Belgian market remains firm. There is a good demand, and without an exception all works are well booked. Prices remain stationary, but well sustained. Machine shops and Structural Iron works complain of low prices, considering the advance in raw material; orders are also less plentiful for the moment. The market is steady, and still rising in value. Bridge builders are satisfactorily engaged; manufacturers of rolling stock less so. Steel works continue reporting favorably.—*Moniteur Industriel*.

AUSTRIA.

VIENNA, September 30, 1887.—Iron.—The fall is satisfactory, and exceeds in volume last year's, which to a degree is due to the fine crops of Austria-Hungary. The articles of Iron and Steel lines usually in demand at this time meet with a ready sale at well sustained rates. We quote Pig Iron @ 46 florins @ ton; Merchant, 105 @ 125; Sheets, 140 @ 175, and Beams, 117 @ 127. Metals move off satisfactorily at firm prices; we quote: Copper, 54.50 @ 55; Lead, 18.50; Spelter, 20.25; Tin, 136 @ 137; Antimony, 41, and Quicksilver, 240 florins @ 100 kg.—*Handel's Journal*.

NEW PUBLICATIONS.

THE METALLURGY OF SILVER, GOLD AND MERCURY IN THE UNITED STATES. By THOS. EGLESTON, LL.D. In two volumes. Volume 1, Silver. John Wiley & Sons, New York, publishers. Price, \$7.50.

Dr. Egleston, who is professor of mineralogy and metallurgy at the Columbia School of Mines, which owes its existence largely to his efforts, is well known on both sides of the Atlantic as an industrious and voluminous contributor to current technical literature. He possesses an important advantage through the constant and intimate intercourse he has with many successful metallurgists in this country, who, as the Germans put it, "once sat at his feet." This should keep him in close contact with current practice and avoid the danger into which compilers easily fall, of being unable to sift what is essential and important from minor details which are controlled by personal and local considerations. Professor Egleston seems to have availed himself of these opportunities to some extent, but we cannot help believing that it would have been possible for him to obtain for the asking figures of cost of recent date. Whenever Professor Egleston touches commercial questions he is led woefully astray. Thus he quotes Connellsville coke at Cheltenham at \$10 a ton on page 76, when it is nearer \$6.50. The quotations for prices of lead-silver ores for 1884 and 1885 might easily have been supplemented by figures at least a year later. No engineer would pay much attention to a statement of cost of roasting in a Bruckner cylinder at the Caribou mill in 1871, or of barrel amalgamation at the Pelican mill in 1874, or the Mettacon mill in 1869. It seems absurd to quote prices paid for silver ores in Colorado in 1874, and yet such instances abound of the use of material collected years ago. When an industry changes as rapidly as that of silver milling during the past decade, the writer of a text-book should take the trouble to freshen up his note-books.

We must confess, too, that no proper balancing in the treatment of the different parts of his subject has been carried through. Thus, while zinc desilverizing is quite fully treated, it is true, with a good many old data, cupellation is poorly handled. The majority of American students could well afford to see the lengthy chapter on the patio, cazo and other primitive methods cut down to a paragraph, and more space devoted to roasting and crushing. We do not quite understand the injection into a volume on silver metallurgy of a lengthy description of the Ball stamp, with records of work nearly 10 years old, nor the fact that when once printed equal if not more space was not given to the Leavitt stamp, a marked step in advance over the older method. It would probably have been far better to give the room thus devoted to what is thus far machinery employed exclusively in the treatment of copper ore to an account of the Boss system of continuous milling, instead of merely referring to it in a casual way.

These are some of the obvious defects of a work which will aim to take rank as one of the modern text-books on the metallurgy of silver. It is to be hoped that the memory of the student is not to be lumbered up with much of what it contains. We would have preferred to see that which is most valuable to beginners, as well as to men for years in practice, a critical discussion of the considerations underlying arrangement of plant, the elements entering into the decision of such questions as the choice of one or the other methods of treatment for particular ores, &c. We are tempted to call the mere description of appliances and processes a treatment of the elementary side of the subject. Professor Egleston undoubtedly does justice to this, but we are sure that the profession would have been greatly indebted to him if he had gone a step further and had more clearly defined, for instance, when and where a metallurgist will do best to turn to leaching rather than to pan amalgamation. It would have been well, too, had attention been called at length to the fact that lead and copper are becoming more and more the carriers of the precious metals. In other words, "dry" ores, so called, are in many localities bought in growing quantities by the smelters of lead and of copper, and are thus withdrawn from the realm of the different methods of treating silver ores.

Professor Egleston has done so much good work, though his scattered papers and con-

tributions to the literature of metallurgy in the United States, that we have looked forward with more than ordinary interest to the volume now issued. We may confess that, while it has come fully up to expectations in some respects, it is a disappointment in others. The book is well equipped, but the proof reading is not up to the mark.

Recent Development of Rack Railways.

From an abstract* of a paper on the subject, by A. Kuntze, in the *Zeitschrift des Vereines Deutscher Ingenieure*, we take the following: Prior to 1880, 10 lines had been constructed on Riegenbach's system—four of which were entirely rack lines, and six partly rack. Since that year six rack lines, two partly rack, and seven rope railways with rack rails, have been laid on the same system. In 1882, Abt's system was introduced, and four lines have been constructed in this manner, while others are in hand. The best known line on Abt's system is that from Blankenburg to Tanne. Riegenbach's rack-rail has kept its original construction with little variation, the chief modifications being in the fastenings and in the use of iron cross sleepers. The latter were adopted first on the Drachenfels line, then on the Niederwald and the Stuttgart and Degerloch lines, and on the Gaisberg (near Salzburg), and others. In the Brüning railway—a mixed line—the channel-irons are $\frac{3}{4}$ inches high, so as to give sufficient clearance for the rack gearing when the engine is on the ordinary rails. In the Höllenthal line in the Black Forest, the ends of the rack teeth are not fixed in through the channel-irons; but one in every four or five is screwed through. The teeth in this line are $\frac{3}{4}$ inches deep, and of corresponding width.

The failure of any one tooth in the Riegenbach rack is of no material consequence, as three teeth of the pinion-wheel are always bearing simultaneously on the rack—one fully, and the two others at one point of contact. On the Drachenfels line, one length of rail was tried, with one tooth missing, on a gradient of 1 in 10, and the train passed and repassed the place with no perceptible shock. The rack on Abt's system has the advantage over Riegenbach's in curves, as the plates can so easily be bent; but the latter system necessarily possesses greater lateral strength and stiffness. Abt's rack can be more readily adapted to any particular traffic, and is economical for light loads, as the number of plates can be reduced from three to two, and the thickness can be varied. The details of the rack and locomotive on the Harz line have already been quoted; as an instance of a lighter construction, the rack on the Lehesten and Oerelsbruch line is formed with two plates, and the engine has two coupled-wheels in two parallel sections, the strain on the rack being 3.7 tons. In each case the average pressure on any tooth is 0.98 ton. A series of Abt's rack-plates, tested at the Mechanical and Technical Laboratory at Munich, gave a result of 5.23 tons as the limiting pressure for one tooth. In Riegenbach's rack, the mean pressure on one tooth is between 3 and 4 tons, and maximum pressure about 7 tons; and on the Gaisberg line, where the larger wheels and two-coupled driving-wheels are employed, the pressure is 10 tons. Riegenbach's pinion-wheel has 33 teeth with 4 inches pitch, and Abt's has 15 teeth with $4\frac{1}{4}$ inches pitch; so that for every time one of the first comes into play the latter is used $\frac{33}{15} \times \frac{120}{120} = 1.8$ times. The present cost of the Riegenbach rack, complete in *sitôt*, is about \$4.55 per lineal yard.

The August issue of the report of the Bureau of Statistics shows the imports of iron and steel for the past eight months to have been as follows:

Imports of Iron and Steel Eight Months.

	Gross tons.	Gross tons.
Iron Ore.....	899,102	175,667
Pig Iron.....	323,320	262,967
Scrap Iron.....	239,616	49,812
Scrap Steel.....	23,041	3,760
Bar Iron.....
Steel Rails.....	82,891	14,222
Cotton Ties.....	10,642	8,408
Steel Plates, Bands, Sheets, Plates.....	17,498	2,372
Steel Ingots, Blooms, Billets, Slabs, Bars.....	285,274	64,975
Sheet, Plate and Tagged Iron.....	8,726	2,887
Tin Plates.....	192,399	190,433
Wire Rods.....	108,696	96,580
Anvils.....	911	655
Chains.....	515	364

The imports into New York for the month of September and the first nine months of 1887 have been as follows, as compiled by the Metal Exchange, the unit being the gross ton:

Imports into New York.

	Eight months.	Nine months.
Iron Ore.....	28,163	6,863
Pig Iron.....	96,684	11,447
Spiegelisen.....	74,959	16,564
Old Rails.....	102,805	12,453
Scrap Iron.....	15,960	662
Scrap Steel.....	15,255	1,001
Billets.....	56,713	9,119
Steel Rails.....	2,419	50
Wire and Nail Rods.....	7,157	9,099
Iron Bars.....	9,277	1,197
Steel Bars.....	7,267	557
Iron		

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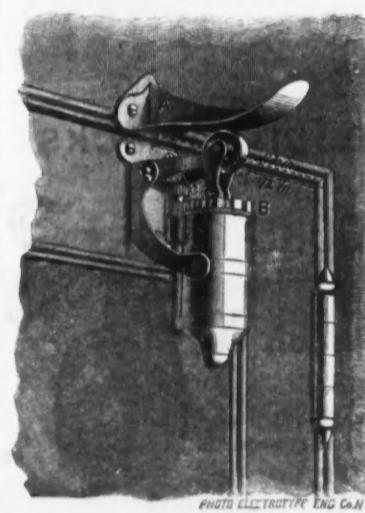
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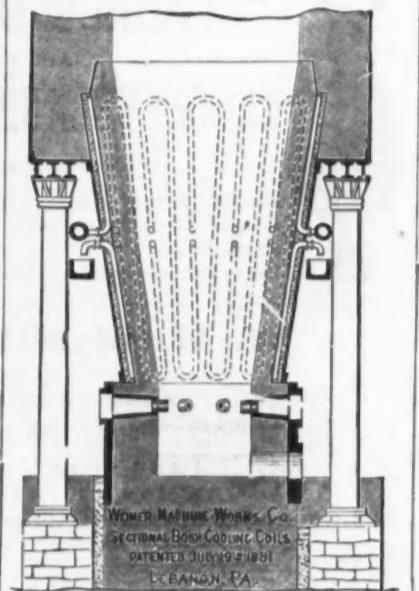
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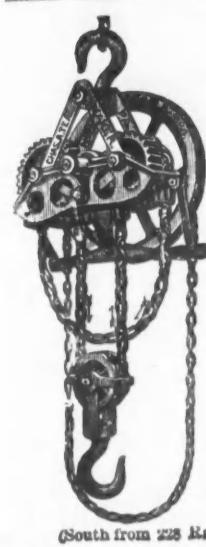
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Iron Making in the South.

An article, contributed to the *Tradesman* by Henry E. Colton, says in regard to the points which influence the cost of iron making in the South:

The question of making iron in the South as cheap as it can be made at Pittsburgh, Cleveland, or in the Lehigh, is simply that of getting an ore containing an average of over 55 per cent. of iron against one that averages little over 40 per cent. Of the ore it frequently takes 3 tons to make a ton of pig, of the other as much as 1½ tons is seldom required to make the ton of pig. Another point in this manufacture is the coke. The only coke yet developed in the South worthy of being called first class is from the Pocahontas field, but its distance from the great iron beds of Tennessee and Alabama make its use in the furnace stack impracticable. To some extent it is mixed with other cokes. It is easy to be perceived by any observant person that some new seam of coal must be found or the manufacture of coke greatly improved before any production of iron can be had for a series of months, if ever, nor the low consumption of coke common with Connellsville. And even with such a coke still remains the siliceous nature of the ores. In this connection the product of our furnaces may be alluded to. There are in the South numerous stacks which were widely proclaimed to be 100 to 125 tons per day capacity. It is safe to state that no furnace in the South has yet, through a blast of two or more years, averaged over 80 tons per day. That these stacks, run on ores averaging 55 per cent. of iron, would make the amount they are rated at there is no doubt, but the space occupied in the stack by 2½ to 3 tons of ore and the necessary quantity of limestone is so plainly greater than that occupied by 1½ to 2 tons and its needed limestone that the result of less production does not need proof. If these facts cannot be remedied, if the South has not richer ores, her mammoth stacks will never produce their estimated capacity, and her pig iron never fall in cost to the boats which have been made of it.

The question of cost of manufacture of pig iron in the South may be summed up as follows: The advantages are—proximity of ore and coal and limestone; present low price of moving all these materials; low price of rough or common labor. The disadvantages are: Leanness of the ores; inferiority of the quality of the coke; the greater amount of heat to be developed to flux the materials; the unreliability of the labor and its uncertainty; want of home market, and distance to the great markets. The Southern iron makers learned many lessons of economy during the days of low priced iron, which many of them have carefully remembered and improved upon. Hence there is no doubt that there is more clear money being made by them now than at any former period when pig iron was at its present prices. And as a consequence of these lessons it is probable that the cost of pig iron is now lower in the South than at any previous date when such prices could be obtained as are now quoted in the market lists.

Improved Dynamos.

In few things is the progress of the last five years more remarkable than in the great reduction of weight, bulk, and cost of dynamo machines. This is readily apparent from the appended comparative table which we extract from Prof. J. A. Fleming's paper on "Electric Lightning in Works and Factories," presented at the recent meeting of the British Iron and Steel Institute:

1200-light Dynamo.		
	1882.	1887.
Weight.....	44,820 lb.	11,700 lb.
Bulk.....	320 cubic feet	180 cubic feet
Cost, including labor.....	154.8 h. p.	112 h. p.
Commercial efficiency.....	67 per cent.	90 per cent.
Price per 1000 Watts output.....	\$120	\$30

The advance of five years has therefore reduced the weight to about one-quarter, the bulk to about one-half, and increased the efficiency by about 25 per cent. in a continuous current dynamo of this type intended for about 1200 lamps. With respect to cost and durability the improvement is also quite striking, the price per lamp having been reduced to about one sixth of its original figure. Equally satisfactory has been the progress in rendering the dynamo a more durable machine. The earlier specimens of 1881-82 resembled more philosophical instruments, built on a very large scale, than machines intended for the continuous rough usage of the workshop; but the catastrophes which resulted from poor insulation and bad mechanical work received in time consideration at the hands of dynamo builders, with the result that the machine itself became a good engineering job, mechanically as well as electrically sound in all its parts. We are able, therefore, to speak of the progress of the dynamo of 1887, as constructed by the first rank manufacturers, as a thoroughly satisfactory machine for the transformation of mechanical power into electric energy, capable of performing that transformation with total loss of not more than 5 to 10 per cent. of the applied power, provided always that the machine is working approximately at its normal capacity and speed.

In quite a number of cities, says *Fire and Water*, the fire alarm telegraph system is being encumbered and embarrassed by devices employed for other purposes than sounding fire alarms. It is possible in some places to go to a fire alarm box in the street and turn in either an alarm of fire, an ambulance call or a call for the police. As all these calls are transmitted over the fire alarm wires, they are received in every engine house, and, as a consequence, every company has to prepare immediately upon the sound of the gong to run to a fire, whereby much unnecessary labor and wear and tear is imposed upon the fire department. A fire alarm system should be used for fire alarms only, and when it renders these satisfactorily it is worth far more than its cost to the community. To complicate it with any other calls is to introduce the pos-

sibility of mistakes and misdirection of the fire apparatus in times of need. If the police and ambulance telegraph is necessary, it should be run entirely independently of the fire alarm system. The simpler the latter can be made the safer it is.

Disease Among Brass-Workers.

Referring to the disease common among workers in various metals the *Medical Record* says:

Very little attention has been paid in this country to certain class of disorders observed among brass-workers. The best known class of symptoms is that constituting what is called "brass-workers' ague." After being exposed to the fumes of the molten metals, copper and zinc, the workman feels a sensation of discomfort and weakness, followed by muscular pains and then by a distinct chill, with headache and often cough. After 15 or 20 minutes a profuse perspiration breaks out, then in a few hours the improvement begins. The patient recovers in one or two days, but is liable to a relapse. Brass-founders' ague was first observed by Blandet in 1845. It was described by Greenhow, of Birmingham, in 1858, and again by Hirt. Brass is an alloy of copper and zinc, the latter being in proportion of 28 to 32 per cent. In the process of making the zinc deflagrates and fills the air with the powdered oxide. Dr. Greenhow believed, there ore, that brass-workers' ague was an acute poisoning with zinc. Hirt, however, thought it due to the mingled fumes of copper and zinc, because it is not observed among zinc smelters. Recently Mr. Edgar Hobson (*Birmingham Medical Review*) reports a number of observations, and states his belief that brass-workers' disease is due to chronic or acute copper poisoning. Almost all the patients who are copper or brass-workers have a distinct green hue or band on the neck of the teeth between the crown and the gum. The edge of the gum is slightly blackened. The copious perspirations of brass-workers are often stained green, and white-haired workmen often have a greenish tinge to their locks. These signs point to an absorption of copper by the workmen, and favor the view that the "ague" is due, in large part at least, to this metal. But these workmen also suffer from other symptoms of a chronic character, such as dyspepsia, metallic taste, colic, constipation, and diarrhoea. Nervousness and pains of various kinds are felt. Deafness is not infrequent; cough and aphonia often occur. Paresis of the legs and symptoms like those of locomotor ataxia have been observed, and it seems probable that the copper can cause myelitis and neuritis, in the same way as lead and other toxic agents do.

Telephone Sirens and their Application.

According to Dr. Karsten, in the *Electrotechnische Zeitschrift*, the telephone siren consists of a disk, on which are arranged, radially and equidistant, a number of bar magnets with all the north poles in the same circle. By means of a clockwork driven by weights this disk is made to revolve in front of a fixed magnet whereby alternate changes of the field take place, resulting in the generation of alternating induction

The Iron Age

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Workmen's Insurance in Germany.

During the past decade, since labor leaders acquired some recognition as a power in politics, there has been a good deal of legislation looking toward the compensation of workmen for injury received during work. At an early date the public authorities were justly appealed to to frame regulations for the safety of workmen in such a hazardous calling as that of the coal miner. The occurrence of fearful catastrophes attending the explosion of fire-damp naturally enlisted public sympathy in such a movement. The disadvantages under which individuals must naturally labor in a contest for compensation for injuries sustained easily led to legislation like the Employers' Liability act in Great Britain. The latter and the regulations for underground workings have been lately modified, but they are far from having approached the scope of the legislation upon which Germany embarked some years since and which it is about to carry still further. The motives which led the Government to initiate past measures and impelled it to propose further legislation need not be discussed. The plan is comprehensive, and, aside from its general interest, has some bearing upon the position of German manufacturers in the world's markets.

On the 15th of June, 1883, a law was passed providing for compulsory relief in sickness to workmen, without any reference whatever to whether or not it was directly or indirectly traceable to their occupation. Only those cases in which it is the immediate fault of the sufferer are excepted. He receives free medical treatment and drugs and half the amount of his usual earnings. The cost is distributed between the workmen's sick fund and the employer, the former contributing two-thirds and the latter one-third. This relief is only granted for a period of 13 weeks, however. After that time payments are made under another law in all cases in which an accident during work was the cause of the sickness. This law is supplemented by those relating to accident insurance, which was passed on the 6th of July, 1884, and was amended

by a series of later acts, going into effect on the 1st of October, 1885. So far as possible men occupied in manufactures or mills producing the same or similar goods are classed together, their employers forming an accident association. The object obviously is to make parties to the same contract those whose work involves at least approximately identical risks. Practically the employers form a mutual insurance association for the benefit of their workmen, paying for its administration, formulating rules for the safety of their men, although the Government itself has an independent elaborate system of factory inspection. In cases of dispute the demand for compensation for injury sustained goes to a board of arbitration, from which there is an appeal to the Imperial Insurance Bureau. The payments to men injured amount to two-thirds of the wages earned at the time of the accident. If it results fatally, 20 per cent. of the rate of wages received by the deceased is paid the widow, and 15 percent. for each child. If the deceased was a widower, each child is entitled up to a certain age to an annuity of 20 per cent. of its father's wages at the time of his death, the aggregate payments thus made to his family not to exceed 60 per cent. of his earnings, however. When a man has been partially disabled by accident when at work part payments are made. This, roughly, is the idea underlying the whole system, which has been admirably worked out in detail, considering the fact that the legislators and the Government had no precedents whatever to guide them.

Some idea of the magnitude of the payments may be obtained from the report recently issued by the association covering the iron manufacturers of the Rhenish Provinces and Westphalia for the period from October 1 to December 30, 1886. This association embraces 255 works, with 70,313 persons insured. The number of accidents was 329, of which 271 led to injury and 58 to death, leaving 37 widows and 77 children to be provided for. The cost of burial and hospital treatment amounted to 13,487.67 marks, to which must be added compensation amounting to 53,631.67 marks—a total of 67,118.98 marks. Under the law three times the amount must be added to a reserve fund, or 201,356.94 marks. The costs of administration were 43,753.20 marks for 1885 and 1886, and 41,729.36 marks were paid in to meet similar expenses of 1887. This carried the total outlay to 353,958.48 marks. Taking the period from October 1, 1885, to the end of 1886, the cost of the accident insurance, including payments to reserve fund, was 312,229.12 marks. As the wages paid during that period footed up to 83,841,224.71 marks, the outlay for insurance per \$100 paid in wages for 15 months was 37 cents. This, it may be conceded, is no heavy sum, but it must be considered that the occupation is not what might be termed hazardous, and that the payments for the relief of widows and children are to some extent cumulative.

The latest phase of the movement which has resulted in the passage of the laws alluded to in the proposal to provide for the old age of workmen by invalid funds, to which the Government is to contribute one-third, the workmen one-third and the employers the balance. An article which is believed to voice the views of the Government estimated that the period of dependence upon this fund would be reached at the age of 65 or 70 years, and that, placing the annuity at 120 marks, the total outlay for the whole Empire would be 66,000,000 marks or \$16,000,000. It is not a matter for surprise that such an estimate is rejected as probably far below the actual requirements by those who are to be called upon to bear one-third of the burden.

In the last quarterly report of the Bureau of Statistics a puzzling table is published professing to give the average prices of merchandise imported into the United States for the 10 years from 1878 to 1887. As we understand the matter, these figures are the averages of the values in the foreign markets from which the goods are imported. Before the passage of the act of March 3, 1883, they included the cost of transportation from the point of production to the vessel in which the shipment was made to this country, and costs, commissions and package, provisions which were repealed by that act. The result is that all averages prior to the fiscal year 1883 were from 5 to 7 per cent. higher. We shall therefore confine ourselves to the years following that time, compiling the table given below:

Average Prices of Imported Iron and Steel—Fiscal Years.

Articles	Unit	1884	1885	1886	1887
Iron ore.....	Ton	\$2.79	\$2.239	\$1.96	\$1.85
Iron bars.....	"	17.419	15.32	15.32	15.889
Scrap iron.....	"	1.043	1.283	1.283	1.283
Scrap steel.....	"	17.734	16.724	12.971	13.316
Steel rails.....	"	31.795	24.803	26.209	19.316
Bar iron.....	Pound	2.06	2.06	1.96	1.84
Cotton ties.....	"	1.56	1.56	1.36	1.36
Hoop, band and scroll iron.....	"	2.66	3.66	1.26	1.46
Steel h'ps, b'nds, strips, sheets and plates.....	"	4.36	4.16	2.56	1.66
Iron bloom, billets, slabs and bars.....	"	2.96	2.46	3.16	0.96
Sheet, plate and taggers iron.....	"	3.76	4.36	4.36	3.06
Tin plates.....	"	3.66	3.86	3.16	3.06
Wire rods.....	"	1.76	1.56	1.36	1.36

The trade will be much surprised to note the almost general downward tendency of prices at a time when we know that values were advancing abroad. This is particularly true of the fiscal years 1886 and 1887. We may acknowledge that some explanations might be furnished in some cases. Thus,

for pig iron, the importation of a larger percentage of Bessemer and a lower percentage of spiegeleisen might mask an advance. In ores a lower grade, or heavier shipments from nearer deposits, might cause an apparent decline in the face of an actual advance. In bar iron heavier shipments of common, and an unchanged or declining movement in such an article as Swedish bar might have a similar effect. It steel ingots, blooms and bars the heavy increase in the receipts of the cruder forms would naturally drag down the average, yet it seems difficult to believe that 0.9 cent or \$2.16 per ton can represent a fair average when a good deal of the goods is worth five times that sum at foreign works. It is a curious fact that the decline in average prices seems to affect as much those articles on which the duties are specific as it does those upon which our duties are ad valorem.

guine over the advantages of delivery by rail as are the owners of other works which are situated differently. The latter are strongly disposed to welcome a change in the system of ore transportation. They would be glad to secure a constant supply of ore extending throughout the whole year, rather than to anticipate their winter needs in the summer and pile up huge stacks in their yards months before it will be required. A great deal of capital is tied up in this way by a large establishment, and the interest on such an investment is a burden in times of close margins on manufactured products.

It is true that the railroad companies themselves hardly expect to revolutionize the ore-carrying trade at an early day, or they would not continue to invest money in constructing ore pockets for loading vessels at ports near the mines. But in this the railroad companies are simply accepting present conditions of trade, and conforming to them. In fact, it is quite possible that the future of the Lake Superior iron-ore trade may require not only increased vessel facilities, but the all-rail routes will be imperatively needed to assist in meeting the demand for transportation. A depression in the iron trade will, of course, affect the demand for Lake Superior ore, and during that time existing facilities for transportation may be more than ample, but a subsequent revival in trade will, as before, bring with it an increased demand for Lake Superior ore, where greater transportation facilities must be provided. At such a time the all-rail routes will be prepared to handle a very considerable part of the trade, and may prevent the rise in freights which has usually formed an important part of the vesselmen's programme on such occasions. A proper management of this business now by the railroad companies will undoubtedly be of great advantage in the future. The chief point for them to consider is the rate which they will charge. If this is made reasonable, and not put so high as to offset all the advantages of rail delivery, the interests of all concerned will be promoted and a beneficial influence will be injected into the ore-carrying business that will be felt throughout the Western iron trade.

The Parliamentary Committee on Gold and Silver.

On September 20, last year, the British Government, at the instigation of many members of Parliament, resolved upon the formation of a committee of investigation on the relations of value between gold and silver. The committee met twenty-three times and heard the opinions of twenty experts on the subject. Their report has been printed, covering 364 pages, and from it we shall make extracts from only three reports, because we consider them of special interest.

Prof. Roberts Austen, Chemist and Warden of the Mint, submitted a memorandum on the average cost of silver production. The world's silver production in 1883, the only year for which he was able to procure reliable data, is given by him as follows:

	Ounces	Ounces
United States.....	55,751,708	55,751,708
Mexico.....	22,750,770	22,750,770
Germany.....	7,417,642	7,417,642
Austria.....	1,563,582	1,563,582
Spain.....	2,393,481	2,393,481
Argentine Republic.....	322,045	322,045
Colombia.....	587,578	587,578
Bolivia.....	12,376,800	12,376,800
Chili.....	4,119,125	4,119,125
Other countries.....	958,506	958,506
Total.....	88,354,733	88,354,733

Representing 2,748,000 kg. The silver was obtained as follows:

	Average cost of production per ounce.
1. From gold.....	308,000
2. From lead ores.....	80,726,000
3. From copper ores.....	7,300,000
4. From silver ores.....	49,920,733
Total.....	88,354,733

Silver brought in the London market in 1883 was 50½ pence on the average, or 2½ times Mr. Austen's estimate of cost of production. The large yield of silver lead will be noticed. British India has at all times been a mysterious country, and, as it affects the gold and silver question more than any other, the light thrown on it by two prominent Indian financial officers is of special interest. Mr. D. M. Barbour, of the Indian Department of Finance, where he has held a position for the past 20 years, dwells particularly on the hoarding of the precious metals practiced by the natives from time immemorial. Recently even more has been worked up into jewelry, which amounts to the same thing. Nearly all the gold imported into India since 1853, aggregating £130,000,000, together with previous importations, has been hoarded. A good deal of silver, partially coined, has also been hoarded, presumably as much in amount as the gold alluded to, Mr. Barbour thinks. Nothing short of a famine brings a portion of the precious metals thus retained into circulation again. Then the natives take the precious metals to the mints. Nor has the opportunity afforded the natives to lend money out on interest diminished their hoarding propensities much.

A good deal of the hidden treasure may have been lost, but this is mere supposition. Between 1861 and 1886 no less than £6,640,000 worth of silver coin is shown to have been shipped to Simla alone, and nearly all of it has remained in cash in the possession of the mountain population of that locality. Latterly, it is true, hoarding has

been observed to decrease somewhat. Still, this deeply rooted habit is adhered to by the bulk of the people, and it is probable that it will continue for a long time to come. Quite recently the decline in silver may have caused a preference to be given gold for hoarding or ornamental purposes, but not much importance need be given to this diversion. It would be different if the double standard were to be adopted in India, for in such an event the hiding away of gold would augment, since it serves better as a reserve. The cost of the necessities of life—of food in particular—is not higher than it has averaged in former years. Wages have increased in the large cities, in localities within reach of railroads or in such places where large factories have been erected, and finally for skilled labor. Under other circumstances they seem to have undergone little change since 1870.

The Financial Secretary for India, Mr. H. Waterfield, stated that the difficulties arising for the Indian Government from the depreciation of silver are to be looked for in the many firm engagements that have to be settled for in gold in England, while the Indian revenue is collected in silver coin. The largest item of income is derived from the land tax, fixed for all time to come for the large province of Bengal, while in the remaining provinces the same can only be partially raised after the lapse of long intervals. The revenue, formerly so considerable, which came from the sale of opium has materially decreased of late, in consequence of certain changes made by China in levying duty on opium imported from India, in accordance with recent treaty stipulations agreed to by Great Britain, and the impulse given in China to the cultivation of the opium poppy. This source of revenue is by no

October 13, 1887.

THE IRON AGE.

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The Condition of the Blast Furnaces of the United States, October 1.

During September the product of the blast furnaces of the United States increased considerably, both so far as anthracite and coke plants are concerned. While the former have not reached the high figures of the summer, we seem likely to do so in the near future; the latter are now turning out iron at a heavier rate than ever before. The effect of the coke strike is now practically over, and in addition to general activity in Western Pennsylvania, Ohio, Illinois, Wisconsin, West Virginia, and the South, some new plants, like those of the Troy Steel and Iron Company, and a number of remodelled furnaces, like the Jupiter, the Belmont and others, are producing. The total output is enormous, and yet there come to us from all quarters reports of moderate or of exceptionally low stocks. So far as we can learn from present indications this great rate in the make is likely to continue at least in the near future.

The status of the anthracite furnaces at the beginning of the month was as follows:

Anthracite Furnaces in Blast, October 1.

Location of furnaces.	Total number of stacks	Number of furnaces in blast.	Capacity per week.	Number of furnaces out of blast.	Capacity per week.
New York	29	14	4,038	15	3,891
New Jersey	15	5	1,944	10	2,998
Spiegel	3	2	127	1	105
Pennsylvania:					
Lehigh Valley	48	88	12,384	10	2,972
Schuylkill Valley	40	23	7,081	17	2,733
L. Susquehanna. Val.	24	18	5,765	6	1,810
Lebanon Valley	15	12	5,073	3	720
U. Susquehanna. Val.	18	10	2,738	8	1,370
Maryland	4	1	290	3	455
Total	197	123	39,440	74	16,654

Furnaces in blast.	Capacity per week.
October 1	39,440
September 1	38,338
August 1	37,930
July 1	40,742
June 1	44,188
May 1	45,802
April 1	45,585
March 1	41,951
February 1	40,735
January 1	39,490
December 1	38,830
November 1	36,348
October 1	35,819
September 1	32,207
August 1	36,841
July 1	36,762
June 1	38,239
May 1	36,924

In New York No. 1 Onondaga went out on the 1st inst. In New Jersey the product has been light, not reaching 8000 gross tons, only five furnaces and two spiegel furnaces being running. Chester, however, has blown in since the beginning of the month. Pequest, we may note, was working the greater part of the month on non-Bessemer pig. The Passaic spiegel furnace has completed relining, and when this reaches our readers is probably again producing. In the Lehigh Valley one of the Crane furnaces is out, but otherwise no important changes have taken place until now, so far as the number of furnaces in blast is concerned. We are informed on good authority, however, that some of the stacks have been working very poorly of late, on account of changes in the character of the fuel used—a result of the strike in the Lehigh anthracite coal district. It is possible even that at an early date the banking of some of the plants so affected may be decided upon. In the Schuylkill Valley Swede has gone out of blast. There is nothing of interest from the Lower Susquehanna district, while in the Lebanon Valley the most significant event during September was the blowing in of the second Colebrook furnace. In the Upper Susquehanna Valley one of the Dunkannon furnaces resumed on the 29th ult.

Below is the status of the charcoal furnaces on the 1st of October:

Charcoal Furnaces in Blast, October 1.

Location of furnaces.	Total number of furnaces.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	3	2	1,560	1	750
Pennsylvania:					
Pittsburgh district	19	18	18,850	1	400
Spiegel	1	1	450	0	0
Shenango Valley	18	16	9,508	2	988
Junata & Conemaugh	22	16	6,089	9	2,310
Spiegel	1	1	2,200	0	0
Youghiogheny Valley	5	3	1,148	2	715
Miscellaneous	3	2	1,185	1	130
Maryland	2	0	0	2	340
Virginia	11	6	2,906	5	2,400
West Virginia	6	4	2,281	2	370
Kentucky	3	2	580	1	280
Ohio:					
Mahoning Valley	15	12	8,129	3	1,640
Hocking Valley	15	12	1,249	8	1,076
Hanging Rock	13	11	2,320	2	439
Miscellaneous	10	8	4,556	2	1,110
Illinois	8	4	12,414	4	1,790
Missouri	3	3	2,098	4	1,750
Indiana	2	1	195	1	140
Michigan	1	0	0	1	290
Alabama	12	10	3,563	2	881
Tennessee	9	8	3,416	0	0
Georgia	2	1	589	1	242
Colorado	1	1	495	0	0
Total	227	152	89,128	35	16,112

As compared with previous months these figures stand:

No. of furnaces.	Capacity per week.
October 1	89,128
September 1	88,124
August 1	62,091
July 1	47,319
June 1	44,965
May 1	83,500

In New England Katahdin furnace has gone out of blast, to be enlarged to 11 x 50 feet. Only one Richmond is blowing, and Kent furnace is temporarily idle. In Pennsylvania Eagle, Hecla, Greenwood, Isabella and Pine Grove were reported in blast on the 1st inst., while in Maryland, Laurel, Muirkirk and one Maryland and one Stickney were in operation, with a September output of 1387 gross tons. In the South there is little to report. Both Ironton and Jenifer did not make their usual product in September, the former being out two weeks. They are now, however, both running well. In Michigan a second Antrim furnace is building. Gogebic furnace was to blow in on the 1st of this month.

To the copper trade one of the most interesting documents issued for some time is the annual report of the Tamarack Mining Company, the concern who were plucky enough to sink 2500 feet through barren rock to strike the famous Calumet and Hecla conglomerate vein. The total expense to date aggregate \$1,365,442.19, of which \$300,000 were for real estate, \$346,820.42 were construction expense to July 1, 1887, and \$688,621.77 were outlays for running expenses up to the same date. During its short life the mine has produced 6,623,719 pounds of ingot copper, sold for \$674,717.95, its other receipts being \$650,000 for 50,000

shares of stock issued at \$13, and \$35,000 for 350 shares of Hancock and Calumet Railroad stock. For this the company are able to show a mine rapidly being developed, equipped with excellent machinery, with a second shaft now sinking, down to 750 feet, and a stamp mill, with two Ball stamp capable of handling 400 tons of rock daily, built at a cost of over \$100,000. This mill began crushing in May, and with the mine rapidly being opened the company may be soon expected to produce with regularity at least 800,000 pounds of ingot per month. They have even under present circumstances produced 750,000 pounds in September. It is evident, therefore, that the Tamarack has become a factor of no mean importance in the copper trade. But their report will be studied closely from another point of view. The Calumet and Hecla Company have always stood alone among the mining companies on Lake Superior in their refusal to publish a detailed report of their operations. In many respects their work differed so much from that of other mines that only a rough guess could be made of their cost of producing ingot copper. The Tamarack, on the same lode, mines rock as hard under conditions which, to say the least, are somewhat more onerous. The yield of the ore broken by the Tamarack was only 2.56 per cent. of ingot in 1886-87, while that of the Calumet and Hecla is close to 4.25 per cent. The former in the fiscal year just closed produced 4,636,521 pounds of ingot copper; the latter made over ten times that amount. Now, using a leased mill, extracting ore from a single shaft, in which rock broken in exploitation work had to be simultaneously handled, the Tamarack brought its cast at the mine of refined copper down to 6.49 cents, and, adding the cost of smelting, freight, commissions and general expenses, was able to close the year with a total cost per pound of copper delivered of 8.21 cents. There is little room to doubt that further lowering will be easily possible. The inference is natural that the great neighbor of the Tamarack should be able to place its product on the market at notably lower figures. So far as cost of production is concerned, there is, therefore, little danger to these great mines.

In Virginia Lynchburg furnace blew in on the 14th ult., and is reported to be doing well. With the exception of the Low Moor, the other Virginia furnaces did not quite reach the product of the preceding month, the aggregate make being 12,215 gross tons. In West Virginia the Belmont, Riverside and Top Mill furnaces did well in September. In Kentucky only Ashland and Norton are running. In Alabama one of the Woodward furnaces was out of blast on the 1st of this month, and one of the two Alice has stopped running. In Tennessee every furnace is at work, the second South Pittsburgh falling into line on the 25th ult. The September output was 12,649 tons. In Georgia the Cherokee ceased producing on the 15th ult.

Below is the status of the charcoal furnaces on the 1st of October:

Charcoal Furnaces in Blast, October 1.

Location of furnaces.	Total number of furnaces.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	14	5	373	9	612
New York	10	3	638	7	585
Pennsylvania	23	5	497	18	689
Maryland	13	4	423	9	520
Virginia	24	6	270	18	770
West Virginia	17	10	975	0	165
Kentucky	2	2	213	0	285
North Carolina	2	1	92	1	80
Tennessee	9	5	931	4	203
Georgia	2	0	0	2	114
Alabama	9	9	2,125	0	0
Michigan	24	14	3,868	10	2,540
Minnesota	1	0	0	1	220
Missouri	4	2	551	2	443
Wisconsin	11	2	978	7	914
Texas	3	0	0	2	320
California	1	0	0	1	240
Washington Ter.	1	1	173	0	0
Oregon	1	0	1	1	100
Total Oct. 1	178	71	12,118	102	8,815
Total Sept. 1	175	67	11,505	108	9,619

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The Orne Electric Outfits.

Bigelow & Dowse, Boston, Mass., are putting on the market a series of electric outfits which are intended to be handled by the hardware trade. One of these outfits complete is represented in Fig. 1, which is designed for call and signal work, and consists of one $2\frac{1}{2}$ inch box bell, push-button, wire and Orne battery. Outfit No. 2 is intended for dining-room and office work, for calling clerks, servants, &c., and has floor push, represented in Fig. 2, instead of the push-button shown in Fig. 1. Outfit No. 3 is for door alarm, signaling when any one opens the door. The door attachment is shown in Fig. 3. It is obvious that with this arrangement the bell can be placed where it is most

working order is to add new solution or zinc; that with it, if the wires get accidentally connected, it works for a while and then stops, and on removing the trouble comes back to its original strength immediately; that when not in use the zinc is not corroded or eaten up, and that it is always ready for use, making it reliable in its operation. Besides the outfits illustrated above the manufacturers announce a burglar window alarm and electric door mat, which rings a bell when one steps on it; a money-drawer alarm, gas lighting outfit and an electric lock. These outfits will doubtless be appreciated by the trade, putting in convenient form and at reasonable prices a line of goods which it is anticipated will come into quite general use. Information

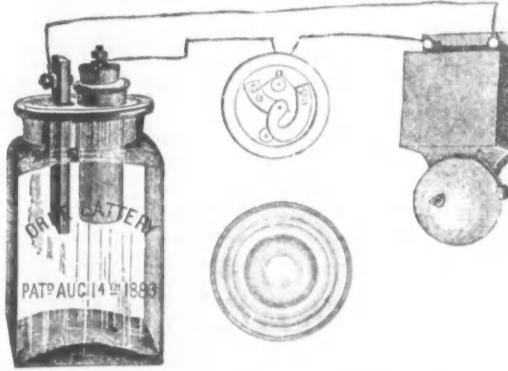


Fig. 1.—Orne Electric Outfit No. 1.

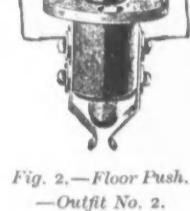


Fig. 2.—Floor Push.—Outfit No. 2.

desirable, and not directly over the door. Outfit No. 4 consists of one Orne battery, wire and bell, with the bronze electric door-pull which is shown in Fig. 4. Each outfit is packed in a separate box, all complete, with instructions telling how to do the wiring in the proper manner, so that the expense of the bell hanger's services may usually be dispensed with. After putting up the dif-

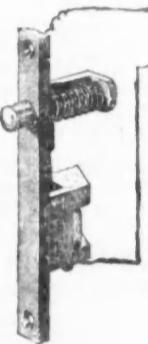


Fig. 3.—Door Spring Connection.—Outfit No. 3.

ferent parts of the outfit, all the customer has to do is to connect the wires and pour the solution into the bottle. Bigelow & Dowse prepare a neat showboard for the use of the trade. It is represented in Fig. 5, and illustrates the operation of the different outfits. It is made of imitation black walnut, and all the wire is on the outside,

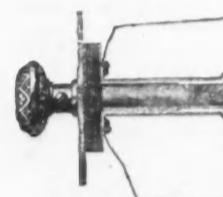


Fig. 4.—Bronze Electric Door Pull.—Outfit No. 4.

so that if it is set up on a counter customers can see how simple a matter is the putting up of the outfits.

Special emphasis is laid on the merit of the Orne battery, which is referred to as the strongest, simplest, cleanest and most economical. The following points are made in regard to it: That it has three times the

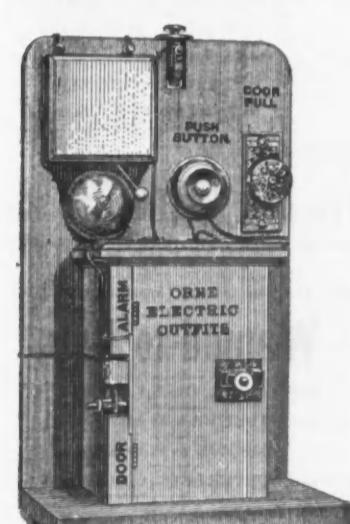


Fig. 5.—Sample Board.

power of any other open circuit battery; that it is perfectly clean, and does not have chemicals creeping over the outside, creating dirt and ruining the connections and working properties; that the solution does not evaporate, and does not constantly require the addition of water to keep it in working order; that it will last two or three years without renewing; that if it gets worked out, all that is needed to restore it to

in regard to prices will be found in the Trade Report.

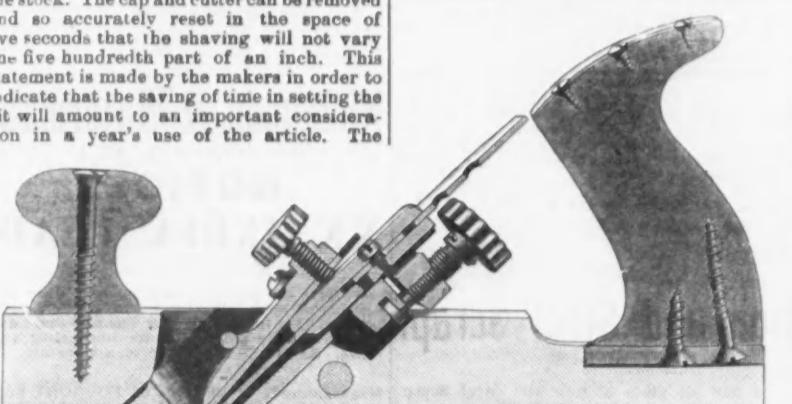
Self-Setting Bench Plane.

Figs. 1 and 2 represent a new self setting bench plane which is being introduced by the Gage Tool Company, of Vineland, N. J. Thus far, the makers claim, combines both the advantages of many of the iron and wood planes already in the market. The construction, as will be gained by an examination of the sectional view, is very simple. In replacing the bit no setting of the same is required, as it enters into the milled groove provided for it, and sets itself with the greatest accuracy. To change the thickness of a shaving it is only necessary to turn the thumbscrew beneath the bit. When properly adjusted it cannot be set wrong or moved out of position by any such means as striking a knot while in motion. This feature is important and will be appreciated by all wood-workers. The cap is not attached to the cutter, but remains stationary, while the bit can be moved up or down by this thumbscrew. Even while



General View of New Self-Setting Bench Plane.

in motion the thickness of the shaving can be changed by a simple movement of the thumb and finger. The parts are so arranged that the bit or cutter can be squared with the face of the plane even if the cutter is not ground square with itself. This also is a very important feature. The throat of the plane is preserved from wear by being within the adjustable iron bit holder which extends through the plane and is securely fastened to a round steel rod passing through the stock. The cap and cutter can be removed and so accurately reset in the space of five seconds that the shaving will not vary one five hundredth part of an inch. This statement is made by the makers in order to indicate that the saving of time in setting the bit will amount to an important consideration in a year's use of the article. The



Longitudinal Section Through Self-Setting Bench Plane.

makers assure us that in the production of this article they use the best material, and pride themselves on their method of tempering, which secures a uniform quality, and which also enables them to warrant their plane irons to stand the hardest hemlock knot to the satisfaction of the user. The plane can also be changed from single to double and from double to single, as the requirement may be, in a very short space of time. Accordingly the buyer of this article has the advantage of a single iron for rapid work and straight-grained wood, and a double iron for finishing or for coarse grained wood. The wood stock of the tool is soaked with hot wax or oil. The parts are of such a character that they may be adapted for use in an old fashioned wood plane, thus making it possible to have old tools remodeled so as to use these improvements.

The Chicago Circular Rocker Cut Meat Cutting Machine.

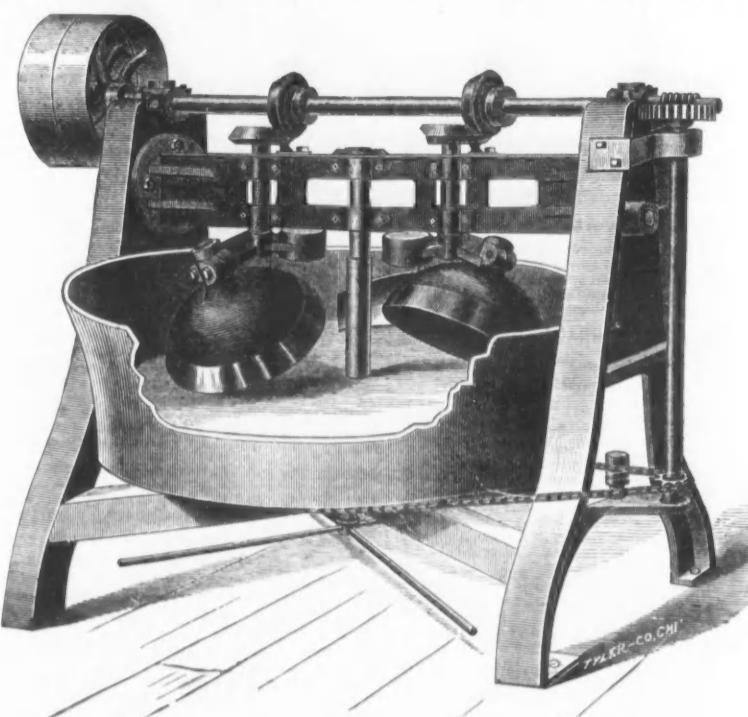
This machine, which is represented in the accompanying illustration, is put on the market by Orr & Lockett, Chicago, Ill. It

cool current of air on the meat while being cut. Among other advantages claimed for this machine are the following: That with the circular rocker cut the noise made by other machines is avoided, as a positive cut is obtained by the rotary motion of the

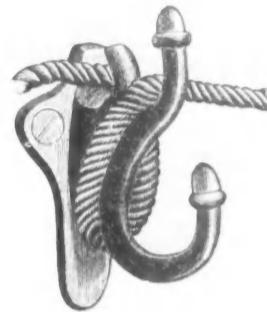
of the light given by it, the manufacturers put it on the market with confidence that it will be appreciated by the trade.

The Diamond Line Holder and Wardrobe Hook.

The accompanying illustration represents an article which is put on the market by Curtis Goddard, Alliance, Ohio. It is made in two pieces, giving the hook a little play and permitting it to take a firm hold of the rope, as shown in the cut. It is intended for the clothes yard, or any place where it is desired to fasten a line for holding clothes after washing and ironing or for drying



Chicago Circular Rocker Cut Noiseless Meat Cutting Machine.

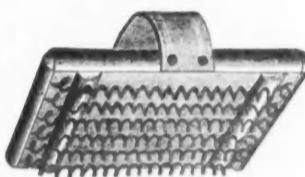


The Diamond Line Holder and Wardrobe Hook.

and airing. It is described as holding the line either way, so that if the line breaks between any two of them the remainder of the line does not come down. The point is also made that it does not mar the line, and that it is easily put up. Its adaptability to use as a wardrobe hook is also alluded to.

The Leader Curry-Comb.

This comb is made by the Morris Hardware Company, Youngstown, Ohio. It is illustrated in the cut given herewith, which shows its special features. The comb is described as made of a block of wood $4 \times 6 \times \frac{3}{8}$ inches, with six coils of cast-steel square wire, the coils being $\frac{3}{8}$ inch in diameter. Six holes are bored at either end of the block to receive the ends of coils, and a



The Leader Curry-Comb.

molding nailed on to hold the springs in place. It is claimed that this comb will clean where any comb will, and will do its work better and quicker than the regular article, while at the same time the fact that there are no sharp points to irritate the skin is alluded to as a special advantage. The point is also made that the spiral springs readily enter the hair, and that their operation is especially efficient in cleaning out the brush, with the advantage that it is not liable to cut the bristle. Its durability is also alluded to, and the fact that the comb is self-cleaning, it not being necessary to knock it against anything to clean it. The comb was patented May 31, 1887.

Brick and Beaded Sheets.

The Sagendorph Roofing and Corrugating Company, of Cincinnati, Ohio, are just introducing two novelties in the metal trade that will, no doubt, command the attention of architects and builders, as well as sheet-metal workers. One of these is designated as brick sheets. A sheet of iron, instead of being corrugated or crimped, as is usual in treating metal, is embossed or pressed into the form of courses of brickwork. The depth of the depressions in the surface is about $\frac{1}{8}$ inch. In laying, the sheets may be used either with the depressions of the joint against the foundation, or in the reverse way, as may be preferred. If the depressions of the joints are placed against the foundation, a slight air chamber is formed equal to the surface of the bricks represented. On the other hand, if the sheet is placed in the reverse manner, the depression of the mortar projecting, the air chamber is contracted to the space of the joint, the surface of the bricks laying against the foundation. Sheet iron treated in this way is, of course, intended for siding, and where it is judiciously managed it forms a very striking imitation of a brick building. The sample before us is painted in about the usual color that is employed with corrugated iron and roofing iron, with the imitation mortar joints in black. The effect is very good. We learn that the company produce this material in sheets 4 feet long and 28 inches wide, in both black and galvanized iron. It is packed either 4 or 5 squares to the crate. The plain sheets are painted on both sides, the striping as above referred to being done after the sheets are in position on the building. The beaded iron is a fac-simile of that already described, save that the vertical joint lines are lacking. It is manufactured in the same shape, and put up in the same size packages. The claim is made for this material that it is as durable as brick, and has the advantage of being subject to low insurance rates.

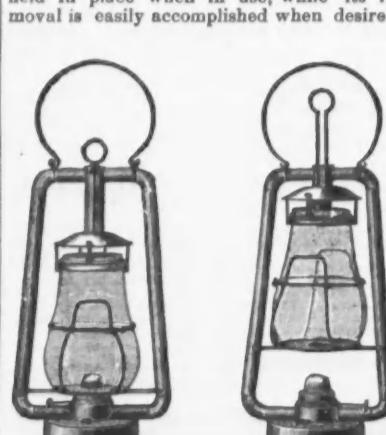


Fig. 1.—Bartholdi Tubular Lantern, Shown Left.

Especial attention is called to the spring by which the globe is protected. When it is desired to remove the globe from the guard a hook on one side is unhooked, when the globe is readily taken out. Allowing to the advantages of the special features possessed by this lantern and the excellence

H. C. Fownes, treasurer of the Carrie Furnace Company, Limited, of Pittsburgh, and James Hemphill, of McIntosh, Hemphill & Co., of Pittsburgh, have just returned home from a three month's trip to Europe. The object of the trip was an investigation of the labor, iron and steel question in England. Both gentlemen report that they had a very enjoyable as well as beneficial trip while absent.

MECHANICAL.

Motive Power by Atmospheric Exhaustion.

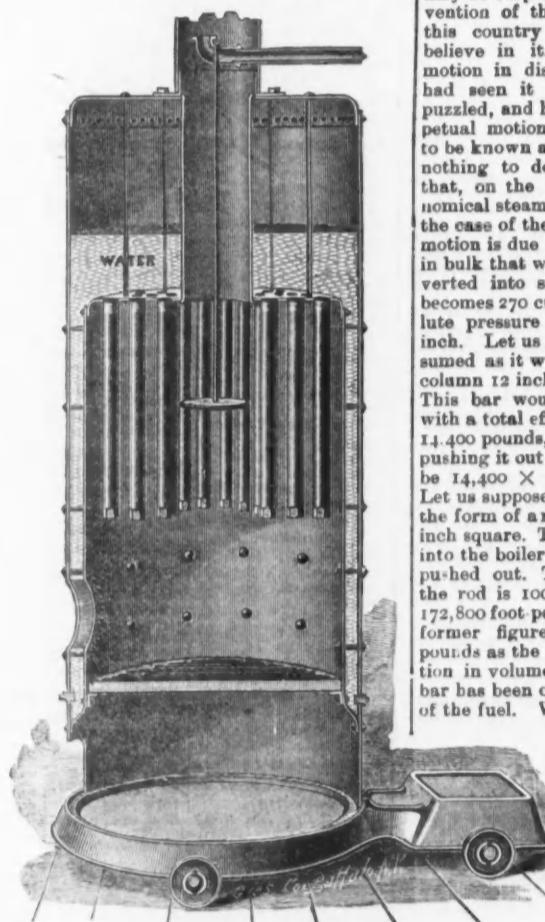
Of the frequently mentioned and described system in Paris of distributing power in dwelling houses by atmospheric exhaustion in subterranean mains, we find the following additional particulars: The installation in the Rue Beaubourg commenced operations in January, 1885, and on the 1st of May, 1886, the power was entirely utilized in driving 70 small motors, in as many workshops, of a power of from 40 foot-pounds to 200 foot-pounds, on a length of about 5000 feet of passageway in the Rue Beaubourg and the adjoining streets. Two new exhausting steam engines and pumps are in course of erection alongside the first one, and the complete installation will consist of three exhausting steam engines and pumps of 75 horse-power each, or together 225 horse power; two steam boilers; a system of passageways 6000 feet long, and about 200 small motors on the different floors of a block, or separately in the different houses of the quarter.

Electric Traction Increases for Locomotives.

The Railroad and Engineering Journal recently referred to a plan for using electricity to increase the adhesion of locomotive drivers to the rails which was tried on the Central Railroad of New Jersey nearly 30 years ago. No official record of the tests seems to have been preserved in the offices of the company. Some of those who took part in them, however, are still on the road, and their testimony is that the trials were continued for some time on two or three engines, but with little or no success, and were finally given up, with the conviction that the results obtained were not sufficient to warrant further use of the apparatus. The arrangement used was a battery (or batteries) carried on the running board of the locomotive, from which connections were made to the tires by means of a magnetic coil. No very definite description of the apparatus survives, however. It was the work of a French inventor named Quetil, we believe. These experiments, however, were really of very little importance, and are only of interest as showing how present investigations were anticipated at an earlier day, when less was known about the subject of electricity than now.

The Climax Vertical Boiler.

We give on this page a sectional view of a vertical boiler built by the Climax Mfg. Company, of Corry, Pa., and supplied by



THE CLIMAX VERTICAL BOILER.

Built by the Climax Mfg. Company, Corry, Pa.

them in connection with their engine, which we illustrated and described last week. It forms, however, a desirable form of boiler for general use. It is of the drop-tube type, and its base has a water bottom, so that it can be set on the floor without incurring any special risk. A central baffle-plate is arranged, as shown, to prevent the too ready exit of the hot gases through the central flue leading to the chimney.

Perpetual Motion in Disguise.

An item relating to a "non-exhaust steam engine" has of late been widely circulated. As its name implies, the engine is designed to return all the steam used to the boiler with a saving of from 75 to 80 per cent. There are no valves, eccentrics, steam chests, cut-off devices or any other delicate or intricate working parts, four single-acting cylinders and a peculiar and not clearly described balancing gear performing all the work. That the whole matter is rubbish is immediately apparent. The London Engineer takes the opportunity afforded by the repeated publication of the item to deliver a short sermon on perpetual motion machines. From it we quote:

"Most engineers will, of course, say that the thing proposed to be done is impossible. Yet, if they were asked to say in a very few words why it cannot be done, they would be at fault. Let us try if we can put the explanation of the obstacles to the production

of perpetual motion in a nutshell. In the first place, then, let us dismiss at once such words as energy and force, which may mislead, because they convey no clear ideas, and confine our attention entirely to motion, the meaning of which word every one understands—*pace* some of the professors. Now, it is absolutely true that no machine, or combination of parts, can create motion. Motion is as indestructible and uncreatable as matter. So far as men's knowledge goes, there is no more or no less motion in the universe now than there was in the beginning. The first question, then, to put to the perpetual motion man and to be answered by him is, simply. From what source do you obtain motion? The answer given may, of course, vary, but we know that the quantity of motion contained in any substance, be it a gas, liquid or solid, cannot possibly be infinite. On the contrary it is strictly limited, and this being so, the quantity of motion available for the machine must be limited, too. For example, if we derive our motion from gravity, then the quantity of it to be got out of a pound or a ton falling a foot or 100 feet is well known. The next point to be considered is that an effect cannot be greater than its cause. If we suffer 1 pound to fall 100 feet it will do work equivalent to 100 pounds falling 1 foot, and so on. But the weight cannot fall forever, and when it is down it cannot be raised again to its original position without the expenditure of quite as much motion in lifting it as was expended by it in falling. This truth is so clearly felt by most persons that the perpetual motion man disguises and hides the fact from himself by the use of wheels, levers, springs, and what not. We may clear all these things away, however, and go to the two ends of the process, so to speak; something must be put in at one end if anything is to be taken out at the other. The intermediate stages can in no way affect the matter; the inventor will freely admit that no one part of his apparatus can by itself produce motion. If this be true, it is equally impossible for all the parts assembled to do what none of them separately can effect. In answer to this argument we have heard it urged that although one man by himself cannot lift a given weight, 20 men can. The objection to this is, of course, that it does not apply; although one man cannot lift the whole weight he can lift a part of it, but no separate portion of the perpetual motion machine can generate or create even so little motion of itself.

Leaving the more absurd and crude forms taken by the idea, let us consider this notion that steam can be pumped back into a boiler. No doubt the injector is responsible for the origin of the idea. Our younger readers may be surprised to hear that when the invention of the injector was announced in this country many engineers refused to believe in it, regarding it as perpetual motion in disguise. When, however, they had seen it work, they were yet more puzzled, and held that it really was "perpetual motion." By-and-by, as more came to be known about it, it was seen that it had nothing to do with perpetual motion, but that, on the contrary, it was a fairly economical steam pump and nothing more. In the case of the steam engine we find that its motion is due entirely to the augmentation in bulk that water undergoes when it is converted into steam. A foot of cold water becomes 270 cubic feet of steam with an absolute pressure of 100 pounds on the square inch. Let us suppose that all this steam assumed as it was made the shape of a bar or column 12 inches square and 270 feet long. This bar would be thrust out of the boiler with a total effort or push of $134 \times 100 = 13,400$ pounds, and the total work done in pushing it out against that resistance would be $13,400 \times 270 = 3,888,000$ foot pounds. Let us suppose that the feed water assumed the form of a rod or bar 1728 feet long and 1 inch square. This water-rod must be pushed into the boiler while the steam-rod is being pushed out. The resistance or push against the rod is 100 pounds, and $1728 \times 100 = 172,800$ foot pounds; deducting this from the former figures, we have 3,715,200 foot-pounds as the net gain due to the augmentation in volume. The motion of the steam bar has been obtained from the combustion of the fuel. We can see at a glance that to push this steam back into the boiler as steam means the substitution of a steam bar 270 feet long and 1 foot square for a feed water bar 1728 feet long and 1 inch square. The motion against a resistance required to force the steam bar into the boiler will be exactly equal in amount to the motion against a resistance with which the steam bar was forced out of the boiler. We need in no way suppose or believe

that the steam knows nothing about such things. At the two ends of this process are the boiler, and as much force must be expended in forcing steam into the boiler as is spent in forcing it out. If it is urged that the volume of the steam returned is less than that delivered, then the answer is, by just so much is the economy claimed for the engine diminished.

Expansive Working in Direct-Acting Pumping Engines.*

Direct-acting engines have peculiar advantages in their application to pumping water. (1) As each individual stroke is a distinct operation, the available expansion is independent of the speed or number of strokes of the engine; (2) the action of the engine is more favorable to proper action of the pump valves; (3) there is a more uniform distribution of strains, and the machinery and necessary building and foundation work are of a simpler and less expensive character; (4) practical proof of advantages possessed by this type of engine is found in the fact that it is very largely employed, and very frequently economy of fuel is sacrificed to secure the good qualities of this type of engine. With regard to the question of

* From a paper by Henry Davey, presented at the last meeting of the British Association.

economizing fuel, a very large number of direct-acting engines are of a construction which does not admit of expansive working, and are therefore extremely extravagant in fuel. The earliest direct-acting expansive working engine was the Cornish, and its good performance is well known. The compound differential engine, like the Cornish, depends for its expansive working on the mass of its moving parts. The pump rods or loaded plungers form a reciprocating fly-wheel, its functions being expressed by the formula $\frac{WV^2}{2g}$. With this engine a considerable degree of expansion is possible, but it is not always possible to employ long

direct to the piston rod of the forcing plunger is fully taken by that plunger, and the pressure brought to bear on the same plunger by the other piston is not the full pressure on that piston, but is dependent on the leverages or relative velocities of the said piston and plunger, determined by the position of the rocking frame. A very great mechanical advantage can thus be obtained, fully realized by reference to Fig. 2, before described. This enables a fourfold expansion to be employed in non-compound, or eight or tenfold expansion in compound engines, having only a small mass in their moving parts. The effect of mass is to

The device is intended to be attached to chucks for holding work in the lathes or boring mills, whereby the relative sizes of different pieces of work secured in the chuck may be readily indicated, but it is more particularly intended for use in connection with the process of boring the hubs of car-wheels to receive the axles.

The chuck is of the common well-known form, having jaws, A A A, sliding in radial grooves in the body B, and operated by screws b b b, which may be geared together so as to operate simultaneously, or may be operated independently; C is a rack-bar, which is secured to one of the jaws, A, so as to move with it; D is a toothed pinion

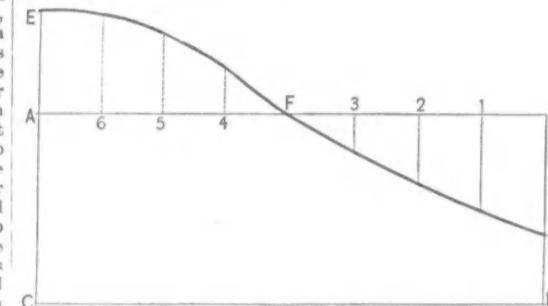


Fig. 1.

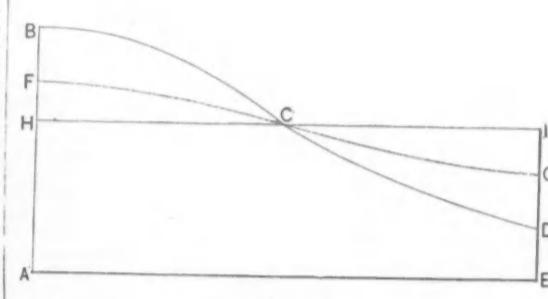


Fig. 2.

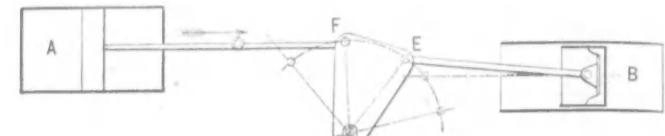


Fig. 3.

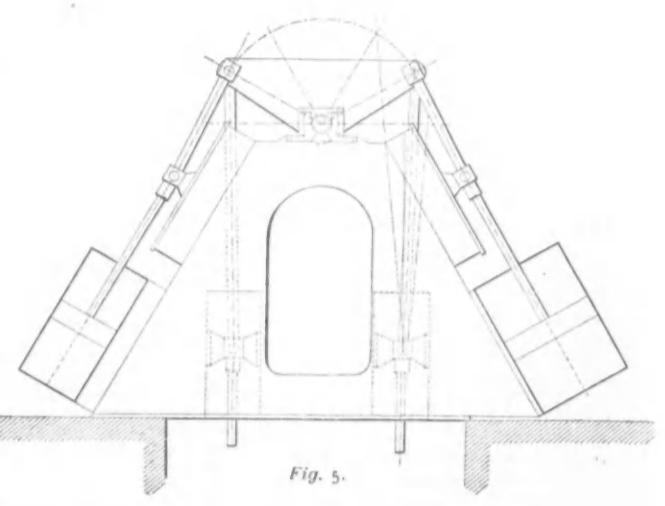
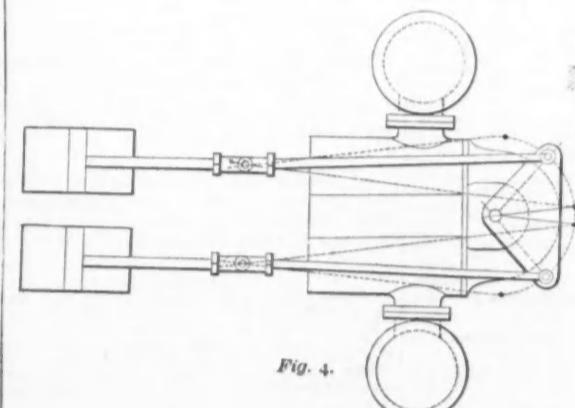


Fig. 5.



EXPANSIVE WORKING IN DIRECT-ACTING PUMPING ENGINES.

pump rods, nor convenient to have loaded plungers. At all events, it would be often convenient if we could dispense with these in meeting local circumstances, and a cheaper engine would be produced. Mr. Davey has endeavored to secure additional expansion in direct-acting engines by coupling the steam and pump pistons together in such a way that the steam piston gets a mechanical advantage over the pump piston as the stroke is produced. In other words, the velocities are equal at the beginning of the stroke, but the relative velocities vary as the stroke proceeds, the velocity of the steam piston being the greater of the two.

In Fig. 1 let the pump resistance be represented by the parallelogram A B C D, and the engine power diagram by the figure C E F G D; and supposing the parts of the engine to have no weight, then means are required by which the piston of the engine may move with varying velocities relative to that of the pump piston, exceeding the mean velocity by the ordinates 1 2 3, and falling short of that velocity by the ordinates 4 5 6. Let A (Fig. 2) be the engine and B the pump piston, and C a triangular frame turning on the fulcrum D. The pump piston is attached to the frame at the point E by means of a vibrating connecting rod, and the engine piston to the point F by means of a similar rod. While the engine is making its stroke in the direction of the arrow the pump piston is decreasing in velocity relative to that of the engine piston, the ratio being determined by the relative positions of E and F. In applying this mechanism to pumping engines, it is first necessary to determine the ratio of expansion to be employed, and then to see how nearly the force and resistance can be equaled. Let A B C D E (Fig. 3) be the combined diagrams of a compound engine working with the given ratio of expansion, A F G E the diagram of effects of the varying velocities of the engine and pump pistons, and A H I E the pump resistance diagram. Then acceleration of velocity takes place from H to C; and knowing the weight of the moving parts the acceleration may be calculated. It will at once be seen that the mechanical advantage obtained greatly reduces the acceleration for a given mass. The practical application of this invention is shown in Figs. 4, 5 and 6. Fig. 4 represents its application to a double cylinder steam pump. The piston rods connecting the steam pistons with the pump pistons are coupled by means of connecting rods to a triangular rocking frame. The pumps are single acting, with plungers, so that when one is making its forcing stroke the other is making its suction or idle stroke. The result of this arrangement is that the two steam pistons are both practically employed in overcoming the resistance of the forcing plunger, and the plunger making its suction stroke requires but little force to move it. The pressure exerted by the piston coupled

to revolve on a stud projecting from the face of the chuck body B and to engage the rack bar C. The pinion is provided with a hub, to which the index hand H is adjustably secured, so as to move with the pinion by means of a set-screw, i. The point of the index hand moves over a graduated arc, as shown. It will be observed that this arc, which may be a separate plate secured to the face of the chuck, or may be marked on the chuck itself, is arranged near the periphery of the chuck at a point not covered by the largest piece of work which the chuck may hold, and that the relation of the index hand to the rack and pinion is such that a slight movement of the jaw will cause the point of the hand to pass over a comparatively wide space, thus enabling the operator to easily note slight differences in the diameters of wheel held between the jaws. In operation it will be observed that this arc, which may be a separate plate secured to the face of the chuck, or may be marked on the chuck itself, is arranged near the periphery of the chuck at a point not covered by the largest piece of work which the chuck may hold, and that the relation of the index hand to the rack and pinion is such that a slight movement of the jaw will cause the point of the hand to pass over a comparatively wide space, thus enabling the operator to easily note slight differences in the diameters of wheel held between the jaws. 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THE WEEK.

The King of Korea in August last received the officers of the United States Searship Omaha with marked tokens of respect, and in his speech expressed more confidence in the Americans than in any other people. In proof of this the Korean Government appointed their first foreign minister to this country.

Among the novelties of recent importation are 142 tons of cliff-stone by a steamer from Hull, and numerous blocks of granite from Glasgow and other ports in the United Kingdom, indicating the scarcity of freights in the Western Transatlantic trade. The stone serves well as ballast and probably sells in New York for enough to pay the cost of handling.

Nathaniel L. McCready, an old and well-known New Yorker, died at sea on the 3d inst. Mr. McCready organized the Old Dominion Steamship Company in 1855, and has ever since been its president. He was a director in the Farmers' Loan and Trust Company and the Empire City Fire Insurance Company, and a member of the Chamber of Commerce.

A French gunboat has penetrated the African continent to Timbuctoo, after strong opposition from the Mohammedan chiefs. For many years thousands of the finest ostrich feathers in the market have come from Timbuctoo. Packed in bales, they have been borne across the Sahara on camels to Morocco and thence to Europe. The special purpose of this expedition was to endeavor to divert these caravans from the desert route to Bamako, and to open a new outlet for the rich products of these countries bordering the Sahara up the Niger and down the Senegal to the sea.

The Dock Commissioners have passed a resolution requiring the occupants of river front property on the East River between Sixth and Thirteenth streets to vacate, as the land is claimed by the city. The principal property holders against whom suits will be brought are William H. Webb, the Metropolitan Ferry Company, the assignees of John Roach, the estate of George Law and the Consolidated Gas Company. These parties will, of course, fight to maintain their possessions.

The British steamer Hankow arrived at this port with 1500 tons of tea from Kowloon, Japan, having made a trip around the world in 206 days.

The Nautical Society of Hamburg has offered a prize of 500 marks for the best essay on the subject of calming the sea by the use of oil. An exhaustive description of experiments of the effect of oil made up to the present time is required, also a criticism of the apparatus used thus far, and especially complete directions for its use by large steamers and sailing vessels.

The committee of which Mayor Hewitt is chairman, appointed to locate the proposed new municipal building, report in favor of the City Hall Park site, and the plan suggested provides for two wings, one fronting Park Row and the other fronting Broadway at right angles to the City Hall and the new Court House. The ground to be taken includes the site of the present Register's Office. The Park row wing is to measure 191 feet by 180, the Broadway wing 220 feet by 160. Each will be six stories high. Mayor Hewitt said that the architectural style of the present City Hall was worthy of imitation in the new building.

The improvement of New York harbor is a subject treated at some length by Lieut.-Col. Walter McFarland, Corps of Engineers, in his annual report. He says the indications are that the work of deepening Gedney's Channel will be finished this year. The dredges will then be set at work on the main ship channel, the deepening of which is to be finished by December 1, 1888. Under the present arrangements 700,000 cubic yards of material will be removed from Gedney's Channel and 1,500,000 from the ship channel. This is said to be not much more than one-half the amount of material that must be removed to secure a depth of 30 feet at mean low water, with a width of 1000 feet, and the removal of the remainder will cost \$540,000.

The contracts for five vessels building at Cramps' shipyards, in Philadelphia, foot up \$4,728,000.

The display of agricultural machinery at the St. Louis fair is larger this year than usual, most of the leading manufacturers of farm implements, especially in the West, being represented. Every available foot of space in the several pavilions is taken, and much of the light machinery has been assigned space outside among the heavier implements. Threshing machines, saw-mills, corn-shellers, hay-stackers, and other ponderous machines are confined to the limits annually assigned to this class. The entire department covers an area of 32 acres. The exhibit of improved machinery and recent inventions in the agricultural line is noteworthy.

It is alleged that many merchants are dissatisfied with C. Lector Magone on account of delay in refunding duties collected under Obersteuer decisions, the amount involved being, according to one of the attorney's employed, not less than \$1,200,000. The collector charges that the delay is on account of the inefficiency of clerks employed before his assumption of office. In a conversation Mr.

Magone stated: "When I came here there were 28,000 unliquidated entries, and with an increase of one-seventh in the business, I have now only 27,000 unliquidated entries on hand. I have added a number of clerks to the force in the Liquidating Bureau, but I must have more. I must also remove inefficient men, and they must go. Some of them are so ignorant that they could not multiply 43 by 43. Under the system of promotions these men's places can easily be filled."

London papers represent that the new settlers from British Guiana, who are filling up a section of fertile territory on the Orinoco River hitherto claimed by Venezuela, are heading down to the seaboard large amounts of gold. The precious metal is found in abundance in the basins of the Cuyuni and Yuruari Rivers. The Venezuelans mean while threaten expulsion.

John D. Kernan, Railroad Commissioner of the State of New York, resigned his official position to resume the practice of law.

The railroad export discrimination against New York and in favor of Chicago is said to be still in full effect. Immediately after the appointment of a committee of the New York Produce Exchange to protect the rights of the New York export trade, the railroads agreed to readjust their rates on a basis of equity, carefully avoiding discriminations in favor of either market. The rate reform was ostensibly put into operation at once, but it was almost as soon discovered by the New York trade that freight contracts had been made ahead under the old discrimination rates to a date in many cases well into next year, thereby practically rendering null and void in its influence in this market the consent of the roads to return to equitable rates.

The trunk line railroads centering in New York report, perhaps without exception, that they had a larger freight traffic in September than for any corresponding month for many years, which is attributed to general activity throughout the country, and the fact that the busy season is so much extended creates confidence in its permanency. E. Clark, Jr., general freight agent, said that the freight traffic of the Central for September would show a handsome advance over August and a large increase over September, 1886. "We are doing more business," he said, "than we have ever done before, and the records will show it. I cannot say why—have not time to go into that. We are doing the business because we have the business to do." The same story was told at the Pennsylvania offices, both as regards passengers and freight. Freight business was found in much the same state of improvement as was claimed at the offices of the New York Central, and there was said to be an increase for September over both August of this year and September, 1886. The business of the New York, New Haven and Hartford Railroad for September shows a considerable advance over September, 1886.

The order of the Knights of Labor, according to the report of General Secretary Litchman, now claims over half a million members. The number of members reported in good standing at the last session of the General Assembly was 702,924, and the number of members in arrears 26,753. This made the apparent membership of the order, as then reported, 729,677. In spite of all the opposition since the Richmond convention the total number of members reported in good standing on July 1 is, in round numbers, 485,000. Add to this nearly 50,000 who are in arrears, and the membership of the order would be 535,000 July 1, 1887. This would indicate an apparent decrease of about 195,000 members. The receipts for the fiscal year ending July 1 are \$388,731, giving, with the balance on hand, a grand total of \$508,647.

Capt. G. C. Goss, who has of late resided in New York City acting as contracting agent for the New England Shipbuilding Company, has recently been in Bath endeavoring to stir up the shipbuilders and capitalists of that city to the point of establishing an iron shipbuilding plant.

There is a rapid development of cotton manufacturing throughout the South, under the stimulus of liberal profits, which the Manufacturers' Record shows to have averaged as high as 20 per cent. on the investments thus far. South Carolina, North Carolina and Georgia take the lead.

The pecuniary embarrassments sometimes experienced by New Yorkers who are unfortunate in business were illustrated last week in the case of Wm. Coogan, who borrowed \$8 on furniture put into a storage warehouse and afterward found he had incurred legal fees and expenses for chattel mortgage, &c., amounting to \$61. Worse yet, the furniture was hastily sold under foreclosure before he could find the mortgagor. Justice Murray pronounced the case a "dastardly outrage," and ordered that the furniture be restored.

The Hamburg-American Packet Company have decided to appropriate \$2,500,000 for the construction of two twin-screw steamers for the New York service to be ready next spring.

Two competing gas companies formed in Chicago some time ago have been consolidated as "a trust," notwithstanding the conditions of their charter that entering a combination, directly or indirectly, should work absolute forfeiture of the privilege. A strong

movement is taking place in favor of proceedings to test whether the conditions of a municipal grant can be thus nullified.

About 100 feet of the Nashua Company's canal dam, at Nashua, N. H., were washed out, causing the mills to shut down. A muskrat's burrow was the beginning of the trouble.

The Governor of Wyoming estimates the population of that Territory at 85,000. Stock grazing has suffered from severe winters, but that business can be properly combined with farming. Bituminous coal deposits are found at numerous localities in the Territory, and the oil fields are important.

The latest "boom" is at Tallapoosa, Georgia, which was a dull village three years ago, but is now one of the most important stations on the Georgia Pacific Railroad.

The smoke nuisance arising from burning sawdust and shavings in Patterson's box factory in Duane street, was the subject of complaint by dry goods men doing business in that neighborhood, and last Friday in the Supreme Court Justice Lawrence decided that the defendants must so conduct their business in the future as not to worry annoyances or discomfort to the plaintiffs by using coal, and abstain from the burning of shavings and sawdust.

Smuggling on an extensive scale is taking place at ports on Puget Sound from British Columbia, as appears from the fact that at Victoria there are no less than 11 establishments engaged in preparing crude opium for the American market, and which reaches the United States without a tithe of it paying duty.

The United States Consul General at Shanghai reports to the State Department the discovery of a system of counterfeiting well-known American brands of cottons by importing an inferior grade of goods and affixing thereto imitations of favorite trade marks. A merchant guilty of this practice was convicted and fined, and, on account of the publicity given to his fate, the importers had to seek a new market, and the scheme was checked. Mr. Kennedy instances the matter as showing "the necessity for plainly branding all goods."

The Empire Subway Company have filed articles of incorporation in the County Clerk's Office, with a capital stock of \$200,000, to manufacture patent pipes, ducts, apparatus for electric wire conductors, conduit and air-line electric systems. The incorporators are John Burton, Maurice Marques, and Allan W. Paige. John B. Kerr is a trustee in addition to the above-named gentlemen.

The merchants of Detroit, assembled in the Board of Trade hall, initiated a movement to secure a permanent exposition in that city. Respecting the success of the exposition at St. Louis, the secretary reported that the cost of grounds and building and their maintenance have been \$900,000, backed up by a capital stock of \$600,000, subscribed for in shares of \$25 each in an open canvas of the city. The largest share of stock taken was \$10,000, and four blocks of that amount were issued. The profits of the first year aggregated \$47,000, the second year \$55,000, the third year \$60,000, with the indications for the current year pointing to \$70,000. W. G. Byrne, secretary of the Minneapolis industrial exposition, gave the total cost of their building plant as \$350,000, the original sum, \$320,000, being raised by popular subscription. The running expenses average \$1,500 per day, and the net profit for 1886 was \$15,000, with every prospect of doubling that sum during the present year.

Commander Meade visited the Samoan islands when in command of the steamer Narragansett in 1872, and succeeded in getting the chiefs to place the harbor of Pango Pango under the protection of the United States Government with a view toward establishing a coaling station there, it being on the direct route between America and Australia. In the future it will probably play an important part, as the harbor is completely landlocked and has an entrance clear of rocks and water for the largest vessels. A special agent was sent out after the return of the Narragansett to negotiate the extension of the protectorate over all the islands, but in 1875 a native chief was elected King, and the American special mission ended by the agent becoming Prime Minister to the King. The latter has shown numerous instances of friendly feeling to the United States, and has granted permission to establish a naval and coaling station there, of which the United States have never fully taken advantage.

In a report to the Department of State upon the trade of Ceylon, United States Consul Morey says that Germany is rapidly advancing her trade and commerce throughout the Orient, and even now her merchants are established on a firm basis in Ceylon. The local market is beginning to abound in German goods, especially tools, which are sold at marvelously low prices.

The report of Consul-General Bonham, at Calcutta, treats at length of the wheat interests of that country during the fiscal year ended March 31, 1886. The area devoted to wheat was about 27,500,000 acres, and the total yield 289,000,000 bushels. A table is annexed, showing that the export of wheat from British India has increased from 300,000 cwt. in 1866 to 21,000,000 cwt. 1886.

and that the increase of 1886 over 1885 amounts to about 5,000,000 cwt. The Consul-General does not agree with some of his predecessors who have claimed that the United States have nothing to fear from India as a competitor in the production of wheat. He fears that with the cheap native labor of India and the constantly growing facilities for transportation, the United States will find her a formidable competitor as a producer of the staff of life.

The work of raising the track and substituting steel for iron rails on the New Orleans division of the Texas and Pacific is progressing rapidly. A year ago there was not a foot of steel on this division now; 220 miles are laid with steel, and the remaining 148 miles will be laid with the same material by the end of October. Over 200 miles of steel have also been laid on the Rio Grande division, which division was also wholly of iron a year ago.

Shipping men at this port are agitating in favor of an international maritime conference, with a view of bringing about various needed reforms in the signal service, especially for the adoption of an improved plan of fog signals to be used in common by the navies of the world for preventing collisions at sea.

A large apartment house in this city, known as Holbrook Hall, was condemned by the Department of Buildings and ordered to be torn down, all the floor beams being unsound as the result of an effort to make them fire-proof. The beams were laid side by side, as closely together as possible, and were fastened with iron bolts. A thick covering of cement was applied both above and below. It is believed that the timbers absorbed the moisture of the cement and rotted.

The long anticipated Baltimore and Ohio deal was consummated 6th inst. by the signing of a contract by Messrs. J. Pierpont Morgan and Norvin Green, representing respectively the Baltimore and Ohio syndicate and Western Union Telegraph Company, which was followed by a transfer of Baltimore and Ohio stock and a general settlement of the business. The terms of the contract provide on the part of the Western Union Telegraph Company for a transfer of \$5,000,000 of its stock and a yearly rental of \$60,000. The effect of the deal on the United Lines and the Postal Telegraph Company is much discussed, and the opinion frequently expressed that these companies, which work together as one, with wires reaching across the country and to all principal cities, would be vastly more formidable with the Baltimore and Ohio Telegraph out of the way. As Mr. Garrett's relations to the whole affair are not yet understood, not a few entertain doubts whether the proposed consolidation will be fully consummated. It does not yet appear whether his approval or disapproval is vital to the success of the undertaking.

The New York Chamber of Commerce passed resolutions favoring a reduction of revenue such as will make the income of the nation conform as nearly as practicable to the necessary expenditures of the nation.

Master Workman Powderly says the day has come for Knights of Labor to ask at the hands of Congress the passage of a law creating a department of labor at the seat of the National Government.

Heavy indebtedness by municipal corporations as a bar to private enterprise was touched upon by President Cleveland in his reception speech at Milwaukee: "With all its extensive public improvements," he said, "the city of Milwaukee has less of public debt than any city of its population in the United States excepting one. In these days, when the temptation to local public extravagance is not often enough withstood, you may well be proud of this exhibit; and besides the satisfaction which this financial condition produces, it has a practical side to it. Large enterprises are often much influenced in their location by such considerations, and they are apt to be established where the burden of taxation is the least and where the share of public indebtedness to be borne by them is the smallest."

Advices from the Island of Samoa are to the effect that King Malietoa has been exiled by the German naval commander in those waters, despite the protest of the British and American consuls, and regardless of the fact that the Samoan Government sustains treaty relations with the United States and Great Britain, practically recognizing the independence of the island. Tamasese is proclaimed king, protected by three German men-of-war and 1300 troops. As the United States has an exclusive right to the most valuable harbor in Samoa and the islands lie on the direct route between this country and Australia, it remains for the State Department at Washington to protect American interests recognized under the existing treaty. Secretary Bayard is reported as saying: "Our treaty guarantees us the splendid harbor and coaling station for our naval vessels, but up to the present time we have never availed ourselves of the privilege."

M. P. Grace, of W. R. Grace & Co., has received from Peru a confirmation of the press dispatch that the Peruvian Cabinet had been prevented by Chilean impediments from submitting the contract entered into

at London to the Peruvian Congress. Mr. Grace said: "This may cause delay, but Chile will have to give way. It is not a question as to Chile's supposed right to interfere that will be considered. The bonds are held in England, France and Germany, and those countries will unite in enforcing the contract, especially when Peru is willing to carry it out. Chile will not have to deal with Peru, but with the three great powers just named."

The Clyde shipbuilding yards are just now in a very depressed condition. There is not a single ship on the stocks in four of the yards—a condition of affairs which has not been known for more than a quarter of a century. It is to be hoped that the Clyde is not going the way of the Thames as a shipbuilding center.

Conveying messages by pneumatic tubes has become a business widely extended in the city of Paris, there being now in use fully 110 miles of metallic tubing within the line of fortifications. The iron tubes are from 16 to 20 feet long, jointed with flanges and bolts. The interior diameter of the tubes is 2 $\frac{1}{8}$ inches. The curves have radii of from 30 to 160 feet. The proportion of curves to straight parts in the whole network is about one seventh. The tubes are laid in the ground at an average depth of 3 $\frac{1}{2}$ feet, and wherever available the galleries of the sewers are used and the tubes laid on brackets along the walls, so that they are always accessible. As a rule, the tubes follow the level of the streets.

The new steel cruiser to be constructed in the Brooklyn Navy Yard is to be 325 feet in length and 57 feet beam. That is about all that is known of it yet at the yard, as the plans and particulars have not yet been sent from Washington.

The Piedmont Exposition at Atlanta, Ga., was opened on Monday, when the machinery was started simultaneously with the booming of cannon, after speeches by Samuel J. Randall and Governor Gordon. A correspondent says: The exhibition is not noticeable in that it is a display of Southern mineral and agricultural wealth, but that such prominence is given to Southern manufacturers. In one section there were seen huge blocks of manganese from Georgia and Alabama, coal from Tennessee and Georgia, marble slabs from the Cherokee region, gold from the Dahlonega country, phosphates from South Carolina, and, in fact, every valuable deposit which has its home in some part of the Piedmont country. A look at this display gives some idea of the wealth of raw material throughout the country and suggests the workshop the South should be. Across the wide avenue in Machinery Hall the visitor is soon convinced that the workshop is already here. Cotton gins, farming mills, plows, furniture, articles in marble, terra-cotta work—all from establishments located in the South—speak volumes for the skill and handiwork of the Southern mechanician.

The Treasury Department has again decided that the failure of an importer to lodge proof to ascertain damage within 10 days after the landing of the goods is fatal to a claim for damage allowance, notwithstanding the alleged failure of the appraiser at the time of examination of the goods to notice their damaged condition.

The National Board of Steam Navigation, at their session in this city last week, were attended by about 30 members. Fifty more names were added to the list, making a total of about 300. Resolutions were adopted in favor of the Interstate Commerce law and in relation to the advancement of the general interests of the mercantile marine.

Frederick H. Abeel, a well-known iron merchant, and for 20 years a member of the firm of Abeel Brothers, No. 190 South street, died, 7th inst., at his late residence, the Branton House. The deceased was born 40 years ago at No. 127 Second avenue, where his father still resides. Mr. Abeel was a member of the St. Nicholas Society for many years.

The business of Savannah during the month of September was unprecedented. There were received over 167,000 bales of cotton. The value of two days' exports was about \$1,500,000, and the amount of tonnage now there is the largest ever known at any period of the year. Thirty steamships were in port loading on one day.

A recent feature of the railroad business of Indiana, Illinois and neighboring States has been the coal traffic. A number of railroads have been constructed to secure a portion of this business; and competition among the various lines and their numerous extensions has served to keep them pretty steady in public notice. The block coal trade is the most important of Indiana's coal business. The west-central portion of the State is the most promising one for the traffic, which has also received the greatest development in the country surrounding the cities of Indianapolis, Terra Haute, Danville, Logansport, &c.

The American Shipping and Industrial League convenes in Boston, October 21, to promote the development and distribution of the products of American labor by an extension of the merchant marine of the United States, and to establish thereby more intimate commercial intercourse with other countries by frequent and direct American mail service.

October 13, 1887.

Trade Report.

ber and November, with some orders for December, but for that month and January there is little doubt that buyers could make favorable terms—probably \$34 @ \$34.50 at mill. For later dates \$35 is mentioned as an inside figure, but there is nothing definite, and much will depend on the condition of the money market.

Old Rails.—The market continues dull and unsettled, but without any material change in prices. Sales during the week have been chiefly at \$22.50, f.o.b. cars here, and a mixed lot of T's and Bridges at \$23, f.o.b. cars Baltimore. Buyers could be found to-day at \$22, f.o.b. cars here, for October deliveries, but holders ask that for lots "ex-ship" to arrive, without much urgency on either side. A sale of T's was made here to-day at \$22 ex-store New York.

Scrap Iron.—Small lots bring about the rates quoted herewith (cargoes, \$20 bid and \$21 asked), say: \$21 @ \$22, or for choice lots \$22.50 @ \$23. No. 2 do., \$15 @ \$16; Turnings, \$15 @ \$16; Old Car-Wheel, \$17.50 @ \$18.50; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$16 @ \$17; do. Borings, \$12 @ \$13; Old Fish Plates, \$27 @ \$28.

Wrought-Iron Pipe.—The recent advance has been fully maintained, and as orders are coming in very rapidly, pushing the mills to their entire capacity, the prospect for the coming winter is somewhat brighter. Discounts remain as last quoted, viz: Lap Welded Black, 55%; Lap Welded Galvanized, 45%; Butt Welded Black, 45%; Butt Welded Galvanized, 35%; Boiler Tubes, 45%.

Nails.—There is but little doing in this department. The season of the year when sales usually drop off is fast approaching, and to secure orders jobbers are inclined to shade prices, causing a general feeling of weakness to pervade this branch of the Iron trade. Price is quoted at from \$2.10 to \$2.25. The latter is said to be jobbers' price, but it does not appear to be strictly adhered to. A meeting of the association is called for the 13th inst. in New York, but from what we can learn nothing but routine business will be transacted.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth avenue, PITTSBURGH, PA., October 11, 1887.

In all lines of the Iron and Steel business, with the exception of the Nail trade, there is a good and regular demand, and, while competition is active, a fair margin for profit is being realized. The Nail trade, for which there appears to be no salvation, continues in an unsatisfactory condition. The Wrought-Iron Pipe interest is again in good shape; mills are all busy, and uniform prices again prevail. The indications are that river navigation, which has been suspended for over three months, will shortly be resumed, and as soon as it is general business will be greatly benefited thereby. While the condition of Pittsburgh has been wonderfully improved within the past few years in regard to railway transportation, the railroads cannot compete with the great water-ways; shipments of Iron, Nails, &c., can be made to nearly all points accessible by river West and South at a much lower rate by river than by rail, and, as a rule, it reaches its destination in better time by river than by rail. Very often when a car is loaded it is run on to a siding, and may stand there for a week or two before it is started on to its destination, whereas when a steamboat is loaded there is no delay; it is important to have the cargo delivered at the earliest possible moment. Not only is Pittsburgh interested in keeping up the great water-ways, but the same is true of all the great cities of the West and South.

Pig Iron.—Never before was the consumption in this district greater than at present. Nearly every mill and puddling furnace is in operation, many of them working up to their full capacity, and the quantity of Pig Iron being consumed is larger, probably, than ever before in the history of the business. However, production is also large, and consumers have no difficulty in obtaining all they want. Within the range of our quotations furnacemen would like to have \$1 1/2 ton more, as they continue to aver that there is little or no margin for profit at present prices. There has been little or no change in prices, with the exception of Bessemer Iron, which has still further declined. We quote as follows:

Neutral Gray Forge..... \$18.00 @ \$18.50 4 mos.
All Ore Mill..... 19.50 @ 20.00 "
White and Mottled..... 17.00 @ 18.00 "
Silvery Iron..... 18.00 @ 19.00 "
No. 1 Foundry..... 21.00 @ 21.50 "
No. 2 Foundry..... 20.00 @ 20.50 "
No. 3 Foundry..... 18.50 @ 19.50 "
Cold Blast Charcoal..... 27.00 @ 30.00 "
Warm Blast Charcoal..... 23.00 @ 26.00 "
Bessemer Iron..... 21.00 @ 21.50 "

The last sales of Bessemer reported were at \$21, four months, but rumors are on the street of sales having been made at still lower prices. The best brands of Neutral Gray Forge may be quoted steady at \$18, cash, at which liberal sales are being made daily.

Muck Bar.—There is a continued good demand, and the market may be quoted steady at \$31 @ \$31.50, cash, as to quality. There are but few sellers of good strong Neutral under \$31.25 @ \$31.50, cash. We can report sales of 1500 to 1800 tons at

\$31.25, cash. The inquiry is mainly for good Neutral. That of a Cold-Short tendency can be had at \$31, cash, but it is more difficult to dispose of at \$31, cash, than the former at \$31.50, cash.

Manufactured Iron.—There is a continued good demand for nearly all kinds of Finished Iron, and prices are still quoted steady upon a basis of 1.90¢ @ 2¢ for Bars, 60 days, 2% off for cash; Plate Iron, 2.40¢ @ 2.45¢; No. 24 Sheet, 2.00¢. Mills running on Skelp or Pipe Iron are very busy, some of them unable to supply it as fast as wanted. October is always a busy month with the Pipe mills.

Nails.—There is no improvement to note in the demand, and business continues dull and unsatisfactory, with but little prospect of any improvement. There is an occasional order for a round lot, but it is generally placed elsewhere, if at all, and the demand is chiefly for small lots, buyers for some reason or other not being disposed to go beyond immediate actual wants. It appears strange that, while almost all other departments of the Iron trade are in a flourishing condition, Nails should be an exception, but such is the case. Prices remain unchanged at \$2, 60 days, 2% off for cash.

Wrought-Iron Pipe.—The meeting of the Wrought Iron Pipe manufacturers took place in this city on Wednesday of last week, but, as intimated in our last report, there was nothing done of interest to the general public, excepting to reaffirm the prices agreed upon a couple of weeks before. There was no advance, as reported by some of the daily papers. The Pipe trade, therefore, is again in good working condition. Present prices, as far as we can learn, are being faithfully adhered to, and mills here, and the same is no doubt true elsewhere, are very busy and will have all they can do for some time yet. The consumption of large size Pipe is fully up to what it was a year ago. Discounts are now as follows: On Black Butt-Welded, 50%; on Galvanized do., 40%; on Black Lap-Welded, 60%; on Galvanized do., 45%; Casing, all sizes, 50%; Boiler Tubes, 57%; 8-inch Drive Pipe, \$1.40 per foot, net; 2-inch Tubing, 13¢ per foot, net.

Billets, &c.—Bessemer Steel Billets are quoted at \$31.50 @ \$32.50 as to size, quality, delivery, &c. Nail Slabs continue neglected, owing to the continued depression of the Nail trade, and consumers allege that Slabs are still much too high as compared with the price of Nails. The former may be quoted at \$31 @ \$31.25, cash. Crop Ends (American) are quotable at \$21.50 @ \$22, and Bloom Ends at \$21 @ \$21.25. Wire Rods (American), sales reported at \$45.

Old Rails.—Bessemer here continues quiet and prices remain unchanged; sale of American Tees at \$26, and Foreign at \$25.25, both cash. Foreign Tees are quotable at \$25 @ \$25.25, and Double Heads at \$25.50 @ \$26.25. The stock of American is steadily being reduced and they will soon be a thing of the past.

Steel Rails.—There is but comparatively little new business, and it is intimated that some furnaces are anxious for contracts for winter delivery. Prices are weak for the delivery in question; may be quoted, nominally, at \$30 @ \$37, cash, on cars at mill. It is said that some railroads are asking to have their orders canceled, while others, not being ready, are wanting the time for delivery extended until next spring and summer.

Railway Track Supplies.—There is a continued good demand for almost everything in this line, and prices are steady. Spikes, 2.60¢, 30 days, delivered. The meeting of Spike manufacturers, it is understood, is fixed to take place in New York on the 24th inst. Splice Bars, 2.10¢ @ 2.20¢; Track Bolts, 3.30¢ with Square and 3.40¢ according to grade; Bessemer and Open-Hearth Machinery, 2.40¢ @ 3¢.

Old Material.—There is a fair demand, and prices as a rule are steady, although the inquiry is chiefly for small lots. No. 1 Wrought Scrap, \$21 @ \$22, net ton; Wrought Turnings, \$15.50 @ \$16.50; Car Axles, \$27 @ \$28; Cast Borings, \$13 @ \$13.25, gross; Old Car-Wheels, \$21 @ \$21.50; sale 200 tons Old Rolls at \$13.50; Open Hearth Steel, \$21 @ \$22, gross.

Chicago.

Office of *The Iron Age*, 95 and 97 Washington St., CHICAGO, October 10, 1887.

The trade of the past week was somewhat curtailed by the intervention of the holidays attendant upon the President's visit to this section. All kinds of business were wholly suspended in this city for one day, but the preparations for the celebration of that day consumed more or less time during the days immediately preceding it.

Pig Iron.—The demand for small lots keeps the market active. Occasional sales of larger lots, ranging from 100 to 500 tons, are made, but buyers generally are not disposed to anticipate their wants. Much inconvenience is experienced from this practice, as it is not possible, with the present light stocks at furnaces, to fill orders with sufficient promptness to meet the necessities of foundries running on less than a week's supply. Telegraphing is the order of the day, but buyers seem to overlook the fact that their iron must be shipped by rail or water and not by wire. Furnace agents located here have for some time been endeavoring to secure a stock of Iron in yards rented for the purpose, with the view of

meeting the requirements of the "pick-up" trade, but as long as present conditions prevail they will be unable to do so. Prices continue about as last quoted, concessions being unusual except on Hocking Valley Coke Iron, which has been forced on the market at \$1 under the price of Coke Iron from other districts. An effort is being made by the Charcoal Pig Iron makers to organize an association for the benefit of their branch of the Iron trade. A preliminary meeting was held at Cleveland on the 5th inst., which adjourned to meet at Detroit on the 10th. It was well attended by representatives of the Lake Superior district. Cash quotations continue as follows, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2, and 3, \$22 @ \$23; Alabama Car-Wheel, \$27; Tennessee Car-Wheel, \$23.50 @ \$24.50; Tennessee Charcoal Foundry, No. 1, \$22.50 @ \$23.50; Missouri Charcoal, No. 2, \$22.50; Jackson County Softeners, No. 1, \$22 @ \$22.50; American Scotch, No. 1, \$22.75 @ \$23; Straight Coke Foundry, No. 1, \$22.25 @ \$22.50; No. 2, \$21.25 @ \$21.50; Anthracite Foundry, No. 1, \$22 @ \$23; Coke Bessemer, run of furnace, \$22.50; Southern Coke, No. 2, \$21.25 @ \$22.

Bar Iron.—There is no improvement to note in the demand, and business continues dull and unsatisfactory, with but little prospect of any improvement. There is an occasional order for a round lot, but it is generally placed elsewhere, if at all, and the demand is chiefly for small lots, buyers for some reason or other not being disposed to go beyond immediate actual wants. It appears strange that, while almost all other departments of the Iron trade are in a flourishing condition, Nails should be an exception, but such is the case. Prices remain unchanged at \$2, 60 days, 2% off for cash.

Bar Iron.—The condition of this branch of trade has changed very slightly. Orders have been small and the market is generally quiet. Quotations for Common Iron, not guaranteed, hover about 1.90¢, f.o.b. Chicago, in carload lots, concessions being made from this price on quantity. Good Muck Bar Iron is quoted at 2¢ @ 2.10¢, same delivery. Store prices now range from 2.10¢ to 2.25¢ according to quantity and quality.

Structural Iron.—Nothing new has developed in this line, the demand for both bridge and building material being reported as active as usual. Little business is in the market for the future, almost every order now being for immediate delivery, builders desiring to close up the season as rapidly as possible. Angles are still quoted at 2.55¢ @ 2.65¢, according to quantity, f.o.b. cars Chicago; Tees, 2.90¢, same delivery; Universal Plates, 2.65¢ @ 2.70¢; Beams and Channels, 3.40¢, in large lots from mill, and 1.5¢ to 1.6¢ more from store.

Plates.—Trade has been very satisfactory, both as regards mill lots and store sales. Inquiries for good quantities of Tank are in the market, and the outlook is very encouraging, although it is still difficult to get satisfactory deliveries from the mills, which are overrun with work. The stores continue to quote Nos. 10 to 14 Sheet Iron, at 3¢; Tank Iron, 2.8¢; Shell, 3.4¢; Steel Shell, 3.4¢; Flange Iron, or Steel, 4¢; Steel Firebox, 4.5¢.

Sheet Iron.—Manufacturers' agents report a continued steady demand for both Black and Galvanized Sheets. Although most of the mills represented here are said to be full of orders for the remainder of the year, they endeavor to crowd in more work when they are able to secure it. Black Sheets are quite firm, on a basis of 3.1¢ for mill No. 27, but Galvanized Iron is still being offered at a concession by some agents. There is an active movement from jobbers' hands, and they state that they are unable to get deliveries as fast as they make sales. Their prices are without change.

Merchant Steel.—The market is a little more quiet than it has been, large orders now being very scarce. As the mills are pretty well filled up, however, the effect of the lull on prices is not marked. Spring Steel is perhaps the firmest on the list, but other grades of Steel are being well held, except the cheapest grades, which compete with Iron. Tool Steel is still quoted at 7.5¢ @ 8.5¢ for Ordinary and 13¢ @ 25¢ for specials; Crucible Sheet Steel, 7¢ @ 10¢, according to grade; Bessemer and Open-Hearth Machinery, 2.40¢ @ 3¢.

Steel Rails.—While inquiries for next year's delivery are still notably absent from the market, the demand is reviving for Rails for delivery during the remainder of this year. Orders for several thousand tons were placed last week with mills in this vicinity for delivery in October and November, and other inquiries are in the market for round lots. The ruling rate is still \$40 for standard sections.

Old Rails and Wheels.—Old Rails are quite weak, and although \$24 is asked for them it is likely that a seller would be unable to realize more than \$23.50 if he were anxious to force a sale. No transactions are reported in this immediate vicinity. Old Car-Wheels are quiet, with \$21 as a nominal quotation, and holders asking higher figures.

Barb Wire.—Business is very dull with both manufacturers and jobbers. The quotation of 3.40¢ for Painted and 4.15¢ for Galvanized, now made by jobbers, is the top of the market. From this price concessions are made according to the size of the order and the competition for trade in the different localities which are covered by the local jobbing houses.

Scrap Iron.—All kinds of Scrap have been moving more or less freely during the week, but no sales of large quantities have transpired. Cast is in greatest demand, but there have been some inquiries for Forge, with no special dullness in any line except in Steel, which seems to be neglected. Quotations are as follows for carefully selected Scrap 3/4 net ton of 2000 lb: Railroad Shop, or No. 1 Forge, \$21 @ \$22; Railroad Track, \$19.50 @ \$20;

Mill Iron, or No. 1 Wrought, \$16.50; No. 2 Wrought, Tank, Flues, &c., \$13.50 @ \$14; Light Wrought, \$10 @ \$11; Machinery Cast, \$16 @ \$16.50; Stove Plate, \$12; Cast Borings, \$10; Wrought Turnings, \$13; Coil Steel, \$16; Locomotive Tires, \$20; Horse Shoes, \$22; Axles, \$26; Leaf Steel, \$18; Mixed Country Wrought, \$15 @ \$15.50.

Nails.—The demand on manufacturers of Cut Nails is better this month than it was at any time during September. Some factories are now selling more than they were able to do previously for several months. At the same time, prices are slightly irregular, but with indications pointing to a little more firmness on the part of manufacturers, and a strong possibility that the very low prices of a year ago will not be reached. A number of manufacturers have resolved to close their mills rather than force their product on the market and compel prices to go lower. If the output is controlled in this way the price of Nails can undoubtedly not go much lower.

Bar Iron.—The market for the following week is as follows, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2, and 3, \$22 @ \$23; Alabama Car-Wheel, \$27; Tennessee Car-Wheel, \$23.50 @ \$24.50; Tennessee Charcoal Foundry, No. 1, \$22.50 @ \$23.50; Missouri Charcoal, No. 2, \$22.50; Jackson County Softeners, No. 1, \$22 @ \$22.50; American Scotch, No. 1, \$22.75 @ \$23; Straight Coke Foundry, No. 1, \$22.25 @ \$22.50; No. 2, \$21.25 @ \$21.50; Anthracite Foundry, No. 1, \$22 @ \$23; Coke Bessemer, run of furnace, \$22.50; Southern Coke, No. 2, \$21.25 @ \$22.

Plates.—The market for the following week is as follows, f.o.b. Chicago: Sheet Iron, 10 to 14, \$21 to \$22; Tank Iron, 2.8¢; Shell, 3.4¢; Steel Shell, 3.4¢; Flange Iron, or Steel, 4¢; Steel Firebox, 4.5¢.

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CURRENT HARDWARE PRICES.

OCTOBER 12, 1887.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name it, it is not stated that the manufacturers are selling at the prices quoted but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

ammunition.	
C. & S. Percussion, 1800-	
ticks & Goldmark's	
F. L. Waterpoof, 1-10's	50¢
E. B. Ground, Edge, 1-10's	65¢
E. B. Ground, Edge, 1-10's, per 100 lbs	25.825 \$
Double Waterpoof, 1-10's	81.40
Musket Waterpoof, 1-10's	62¢
3. D.	28¢
4. B.	30¢
Under Metallic Cartridge Co.	
F. C. Trimmed	50¢
F. L. Ground	65¢
Cen. Fire Ground	70¢
Double at a time	25.825 \$
Double at a time, in 140 lbs	31.40
8. B. Genuine Imported	45¢
Key's D. Waterpoof, Central Fire	51¢
K. & C. D. Waterpoof, Central Fire	51.10
Cartridges—	
Ring Fire Cartridges	62¢
Ring Fire, Military Cartridges	15.825 \$
Cen. Fire Cartridges, Pistol and Rifle	62¢
Cen. Fire Cartridges, Military & Sporting	50¢
Blank Cartridges, except 22 cal., an add.	
Blank Cartridges, 22 cal.	1.50
Blank Cartridges, 32 cal.	3.15
Blank Cartridges, 38 cal.	3.50
Primed Shells and Bullets	25.825 \$
Austin & Eddy No. 2008	1.00
B. B. Caps, Round Ball	1.00
B. B. Caps, Conical Ball, Swaged	1.75
P. Primer	
Benton Primers, all sizes, and B. L. Caps for	
Sturtevant Shells	90¢
All other Primers, all sizes	1.10
B. L. Caps	2¢
Wells—	
Paper Shot Shells, 1st & 2d or S. G. qual.	15.825 \$
Selbott's Combination Shot Shells	15.825 \$
Cast Iron Shell, 22 cal.	70¢
Cast Iron Chain (Sargent's) List	60¢
Tives' Patent Door Bolts	65¢
Wrought Barrel	70¢
W. S. Shum's Square	70¢
W. S. Shum's Knob	70¢
W. S. Shum's Knob, Stanley's	40¢
W. S. Shum's Knob, Stanley's List	60¢
W. S. Shum's Knob, Stanley's List	55¢
W. S. Shum's Knob, Stanley's List	65¢
W. S. Shum's Knob, Stanley's List	70¢
W. S. Shum's Knob, Stanley's List	75¢
W. S. Shum's Knob, Stanley's List	80¢
W. S. Shum's Knob, Stanley's List	85¢
W. S. Shum's Knob, Stanley's List	90¢
Carriage—	
Com. Inst. June 10, '84	70¢
Gentleman's, Inst. Oct. '84	70¢
D. & J. White's, Inst. Oct. 7, '84	75¢
Tanned Firms.	75¢
Tanned Firms, Butcher's	85¢
Tanned Firms, Spear & Jackson's	90¢
Tanned Firms, Buc. Bros.	10¢
Cold Chaises, &c.	15¢
Chairs—	
Soket Framing and Firmer—	
Witherby and Douglas	70¢
Red.	70¢
Blue.	70¢
White Crayons.	70¢
Chalk Lines.—See Lines.	
Chisel's.	
Barbed, 1 in. and larger.	70¢
Barbed, 4 in.	9.65
Blocks.—	
Ordinary Tackie Blocks, list April 17, '85.	
Bolts—	
Door and Shutter	
Cast Iron Barrel Square, &c.	70¢
Cast Iron Shutter	70¢
Cast Iron Chain (Sargent's) List	60¢
Wrought Barrel	70¢
W. S. Shum's Square	70¢
W. S. Shum's Knob	70¢
W. S. Shum's Knob, Stanley's	40¢
W. S. Shum's Knob, Stanley's List	60¢
W. S. Shum's Knob, Stanley's List	55¢
W. S. Shum's Knob, Stanley's List	65¢
W. S. Shum's Knob, Stanley's List	70¢
W. S. Shum's Knob, Stanley's List	75¢
W. S. Shum's Knob, Stanley's List	80¢
W. S. Shum's Knob, Stanley's List	85¢
W. S. Shum's Knob, Stanley's List	90¢
W. S. Shum's Knob, Stanley's List	95¢
W. S. Shum's Knob, Stanley's List	100¢
W. S. Shum's Knob, Stanley's List	105¢
W. S. Shum's Knob, Stanley's List	110¢
W. S. Shum's Knob, Stanley's List	115¢
W. S. Shum's Knob, Stanley's List	120¢
W. S. Shum's Knob, Stanley's List	125¢
W. S. Shum's Knob, Stanley's List	130¢
W. S. Shum's Knob, Stanley's List	135¢
W. S. Shum's Knob, Stanley's List	140¢
W. S. Shum's Knob, Stanley's List	145¢
W. S. Shum's Knob, Stanley's List	150¢
W. S. Shum's Knob, Stanley's List	155¢
W. S. Shum's Knob, Stanley's List	160¢
W. S. Shum's Knob, Stanley's List	165¢
W. S. Shum's Knob, Stanley's List	170¢
W. S. Shum's Knob, Stanley's List	175¢
W. S. Shum's Knob, Stanley's List	180¢
W. S. Shum's Knob, Stanley's List	185¢
W. S. Shum's Knob, Stanley's List	190¢
W. S. Shum's Knob, Stanley's List	195¢
W. S. Shum's Knob, Stanley's List	200¢
W. S. Shum's Knob, Stanley's List	205¢
W. S. Shum's Knob, Stanley's List	210¢
W. S. Shum's Knob, Stanley's List	215¢
W. S. Shum's Knob, Stanley's List	220¢
W. S. Shum's Knob, Stanley's List	225¢
W. S. Shum's Knob, Stanley's List	230¢
W. S. Shum's Knob, Stanley's List	235¢
W. S. Shum's Knob, Stanley's List	240¢
W. S. Shum's Knob, Stanley's List	245¢
W. S. Shum's Knob, Stanley's List	250¢
W. S. Shum's Knob, Stanley's List	255¢
W. S. Shum's Knob, Stanley's List	260¢
W. S. Shum's Knob, Stanley's List	265¢
W. S. Shum's Knob, Stanley's List	270¢
W. S. Shum's Knob, Stanley's List	275¢
W. S. Shum's Knob, Stanley's List	280¢
W. S. Shum's Knob, Stanley's List	285¢
W. S. Shum's Knob, Stanley's List	290¢
W. S. Shum's Knob, Stanley's List	295¢
W. S. Shum's Knob, Stanley's List	300¢
W. S. Shum's Knob, Stanley's List	305¢
W. S. Shum's Knob, Stanley's List	310¢
W. S. Shum's Knob, Stanley's List	315¢
W. S. Shum's Knob, Stanley's List	320¢
W. S. Shum's Knob, Stanley's List	325¢
W. S. Shum's Knob, Stanley's List	330¢
W. S. Shum's Knob, Stanley's List	335¢
W. S. Shum's Knob, Stanley's List	340¢
W. S. Shum's Knob, Stanley's List	345¢
W. S. Shum's Knob, Stanley's List	350¢
W. S. Shum's Knob, Stanley's List	355¢
W. S. Shum's Knob, Stanley's List	360¢
W. S. Shum's Knob, Stanley's List	365¢
W. S. Shum's Knob, Stanley's List	370¢
W. S. Shum's Knob, Stanley's List	375¢
W. S. Shum's Knob, Stanley's List	380¢
W. S. Shum's Knob, Stanley's List	385¢
W. S. Shum's Knob, Stanley's List	390¢
W. S. Shum's Knob, Stanley's List	395¢
W. S. Shum's Knob, Stanley's List	400¢
W. S. Shum's Knob, Stanley's List	405¢
W. S. Shum's Knob, Stanley's List	410¢
W. S. Shum's Knob, Stanley's List	415¢
W. S. Shum's Knob, Stanley's List	420¢
W. S. Shum's Knob, Stanley's List	425¢
W. S. Shum's Knob, Stanley's List	430¢
W. S. Shum's Knob, Stanley's List	435¢
W. S. Shum's Knob, Stanley's List	440¢
W. S. Shum's Knob, Stanley's List	445¢
W. S. Shum's Knob, Stanley's List	450¢
W. S. Shum's Knob, Stanley's List	455¢
W. S. Shum's Knob, Stanley's List	460¢
W. S. Shum's Knob, Stanley's List	465¢
W. S. Shum's Knob, Stanley's List	470¢
W. S. Shum's Knob, Stanley's List	475¢
W. S. Shum's Knob, Stanley's List	480¢
W. S. Shum's Knob, Stanley's List	485¢
W. S. Shum's Knob, Stanley's List	490¢
W. S. Shum's Knob, Stanley's List	495¢
W. S. Shum's Knob, Stanley's List	500¢
W. S. Shum's Knob, Stanley's List	505¢
W. S. Shum's Knob, Stanley's List	510¢
W. S. Shum's Knob, Stanley's List	515¢
W. S. Shum's Knob, Stanley's List	520¢
W. S. Shum's Knob, Stanley's List	525¢
W. S. Shum's Knob, Stanley's List	530¢
W. S. Shum's Knob, Stanley's List	535¢
W. S. Shum's Knob, Stanley's List	540¢
W. S. Shum's Knob, Stanley's List	545¢
W. S. Shum's Knob, Stanley's List	550¢
W. S. Shum's Knob, Stanley's List	555¢
W. S. Shum's Knob, Stanley's List	560¢
W. S. Shum's Knob, Stanley's List	565¢
W. S. Shum's Knob, Stanley's List	570¢
W. S. Shum's Knob, Stanley's List	575¢
W. S. Shum's Knob, Stanley's List	580¢
W. S. Shum's Knob, Stanley's List	585¢
W. S. Shum's Knob, Stanley's List	590¢
W. S. Shum's Knob, Stanley's List	595¢
W. S. Shum's Knob, Stanley's List	600¢
W. S. Shum's Knob, Stanley's List	605¢
W. S. Shum's Knob, Stanley's List	610¢
W. S. Shum's Knob, Stanley's List	615¢
W. S. Shum's Knob, Stanley's List	620¢
W. S. Shum's Knob, Stanley's List	625¢
W. S. Shum's Knob, Stanley's List	630¢
W. S. Shum's Knob, Stanley's List	635¢
W. S. Shum's Knob, Stanley's List	640¢
W. S. Shum's Knob, Stanley's List	645¢
W. S. Shum's Knob, Stanley's List	650¢
W. S. Shum's Knob, Stanley's List	655¢
W. S. Shum's Knob, Stanley's List	660¢
W. S. Shum's Knob, Stanley's List	665¢
W. S. Shum's Knob, Stanley's List	670¢
W. S. Shum's Knob, Stanley's List	675¢
W. S. Shum's Knob, Stanley's List	680¢
W. S. Shum's Knob, Stanley's List	685¢
W. S. Shum's Knob, Stanley's List	690¢
W. S. Shum's Knob, Stanley's List	695¢
W. S. Shum's Knob, Stanley's List	700¢
W. S. Shum's Knob, Stanley's List	705¢
W. S. Shum's Knob, Stanley's List	710¢
W. S. Shum's Knob, Stanley's List	715¢
W. S. Shum's Knob, Stanley's List	720¢
W. S. Shum's Knob, Stanley's List	725¢
W. S. Shum's Knob, Stanley's List	730¢
W. S. Shum's Knob, Stanley's List	735¢
W. S. Shum's Knob, Stanley's List	740¢
W. S. Shum's Knob, Stanley's List	745¢
W. S. Shum's Knob, Stanley's List	750¢
W. S. Shum's Knob, Stanley's List	755¢
W. S. Shum's Knob, Stanley's List	760¢
W. S. Shum's Knob, Stanley's List	765¢
W. S. Shum's Knob, Stanley's List	770¢
W. S. Shum's Knob, Stanley's List	775¢
W. S. Shum's Knob, Stanley's List	780¢
W. S. Shum's Knob, Stanley's List	785¢
W. S. Shum's Knob, Stanley's List	790¢
W. S. Shum's Knob, Stanley's List	795¢
W. S. Shum's Knob, Stanley's List	800¢

Trade Report.

General Hardware.

There is but little change in the condition of the Hardware market, the demand continuing good, and a trade which is generally satisfactory being done. Prices are steady. Certain lines of goods, principally in Heavy Hardware, are rather scarce, and there is some delay in filling orders. Some complaint is made that collections are slow, but many houses report little trouble on that score.

NAILS.

The New York market has been more active, agents reporting a larger volume of business, chiefly in small orders. The market is weaker, however, Iron Nails selling from store at \$2 to \$2.10. For carload lots \$2 is quite generally adhered to.

WIRE NAILS.

The condition of the New York Wire Nail market has undergone no change. There is still complaint of cutting. We quote for round lots \$2.90 to \$3 base.

BARB WIRE.

Business is light and the market remains stationary on the basis of 4.10 cents for carload lots of Four Point Galvanized Barb Wire.

MISCELLANEOUS PRICES.

The Orne Electric Outfits described on page 17, and put on the market by Bigelow & Dowse, Boston, Mass., are sold from the following list, which is subject to a discount to the trade of 20 per cent.:

Orne Electric Outfit No. 1.

One 2½-inch Box Bell, Orne Battery, Push Button and Wire.....\$3.00
Extra Push Button, each.....20
Extra Bells, each.....1.75

Orne Electric Outfit No. 2.

One Orne Battery, Floor Push, Wire, one 2½-inch Bell.....\$3.50
Extra Floor Pushes, each.....65
Extra Bells, each.....1.75

Orne Electric Outfit No. 3.

One Orne Battery, one 2½-inch Bell, Wire and Door Spring Connection.....\$8.50
Extra Door Connections, each.....50
Extra Bells, each.....1.75

Orne Electric Outfit No. 4.

One Bronze Electric Door Pull, one Orne Battery, Wire, and one 2½-inch Bell.....\$5.00
Extra Door Pulls, each.....1.75
Extra Bells, each.....1.75

The sample boards, shown in Fig. 5, page 17, are sold at \$7, net.

The following is the price list of the Nut Picks and Cracks manufactured by H. M. Quackenbush, Herkimer, N. Y. It will be remembered that the No. 1½ Picks and Cracks, a size intermediate between the No. 1 and 2, have recently been added. These goods are made of Steel, chased with handsome designs and heavily Nickel-Plated. The list of the No. 1 is as follows, the discount being 40 per cent. 30 days, with a further discount of 2 per cent. for cash in 10 days:

A 1, 6 Picks only in box.....\$1.25
B 1, 12 Picks only in box.....2.25
C 1, 6 Picks and 1 Crack in box.....2.00
D 1, 12 Picks and 2 Cracks in box.....4.00

The following are the list prices of Nos. 1½ and 2, the discount on which is 40 and 10 per cent., 30 days, subject to an additional discount of 2 per cent. for cash in 10 days:

A 1½, 6 Picks only in box.....\$0.90
B 1½, 12 Picks only in box.....1.75
C 1½, 6 Picks and 1 Crack in box.....1.75
D 1½, 12 Picks and 2 Cracks in box.....3.50

The regular monthly meeting of the National Association of Tube and Pipe Manufacturers was held at the Monongahela House, Pittsburgh, on Wednesday, the 5th inst. There are 19 members in the association, 17 of which were represented at the meeting in person, the other two being represented by proxy. After hearing a number of reports as to the condition of the trade, which were generally encouraging, it was decided to make an advance in the price of Casing, 2 inch Tubing and Line Pipe. Discounts and net prices are now named as follows:

Per cent.
Butt-Welded Black Pipe, 1½ inches and smaller.....50
Lap-Welded Black Pipe, 1½ inches and larger.....60
Butt-Welded Galvanized Pipe, 1½ inches and smaller.....40
Lap-Welded Galvanized Pipe, 1½ inches and larger.....45
Tarred Pipe, 1½ inches and smaller.....50
Well-Casing, all sizes.....50
Lap-Welded Charcoal Iron Boiler Tubes.....55
Lap-Welded Steel Boiler Tubes.....40
Casing.....50
Tubing.....50
Line Pipe is as follows, net: 2-inch, 12 cents; 2½-inch, 18 cents; 3-inch, 23 cents; 3½-inch, 27 cents; 4-inch, 33 cents; 4½-inch, 38 cents; 5-inch, 46 cents; 6-inch, 64 cents.

English Caps have recently been held at somewhat lower prices on account of the ruling of the Treasury Department by which the coverings are exempted from duty.

Steel Goods are held with apparent firmness at the regular prices, and the amount of business is referred to as fair, but not heavy.

The stock of Bright Chains in the hands of the manufacturers is low, and the manufacturers enter the market this season with very little stock from which to supply the large demand which is setting in, so that the indications are that this class of Chains will be somewhat scarce, and it is not unlikely that purchasers will find themselves short for goods. Prices will consequently be firm, and the probability of an advance is alluded to.

In the present condition of business, the very satisfactory demand which has prevailed and still continues, a good many lines

of goods, especially in heavy Hardware, are scarce and orders are slow in being filled. Among such goods may be mentioned Chain, Heavy Hinges, Bolts of all kinds, Crow Bars, Wedges, Axles, Springs, &c.

The market for Manila Hemp has been slightly weakened by large arrivals, and prices are not as strong as they have been for the past few weeks. No change, however, is made in quotations. The following is the manufacturers' price list:

Manila Rope. Cts. per lb.
1½ inch cir. and upward.....12½
12 thread, or ¾ inch diameter.....12½
6 and 9 thread, or ½ and 1½ inch diameter.....13½
Fine 6 thread, or 3½.....13½
Bolt Rope.....13½
Tarred Rope.....11½
Lath Yarn, medium.....11½

Sisal Rope

1½ inch cir. and upward.....11½
12 thread, or ¾ inch diameter.....12½
6 and 9 thread, or ½ and 1½ inch diameter.....13½
Fine 6 thread, or 3½.....13½
Bolt Rope.....13½
Tarred Rope.....11½
Lath Yarn, fine.....11½
Lath Yarn, coarse.....10½
Hay and Hide Rope, medium.....11½
Hay and Hide Rope, fine.....12½

Russia Hemp

White Rope.....14
Tarred Rope and Ratline.....11
Spun Yarn.....9½
Bolt Rope, Household, Rounding and Hambro-line.....13
Packing, Hemp.....13
Marline, Household, Rounding and Hambro-line.....13
Packing, Tow.....11
Marline, Household, Rounding and Hambro-line.....13
Sash and Bell Cord.....25 to 35

American Hemp

White Rope.....14
Tarred Rope and Ratline.....11
Spun Yarn.....9½
Bolt Rope.....13
Packing, Hemp.....13
Marline, Household, Rounding and Hambro-line.....13
Packing, Tow.....11

Jute

Rope and Packing.....7½
Bed Cords and Clothes Lines.....8½
Oakum.....7½

School Slates are higher than they have been, the advanced prices of the combination being maintained, and the goods which were in the hands of second parties having been for the greater part exhausted; 4c and 10 per cent. may be named as a regular discount.

The Bartlett Beef Tea Press, described on page 17 and manufactured by S. R. Bartlett, 29 St. John's Place, Brooklyn, N. Y., for whom the Dover Stamping Company, 112 Chambers street, New York, are agents, is designated as No. 5 in the following list of his manufactures, the discount on which is 50 per cent.:

No. 5, Round, family size, for beef tea.....\$0.50
No. 1, Square, family size, 6 x 9 x 4 in. deep.....1.50
No. 2, Square, family size, 8 x 12 x 5 in. deep.....3.00

The National Association of Spring and Axle Manufacturers have recently been in conference in regard to matters of interest, and another meeting of the association will be held in the near future.

The following are the discounts of D. R. Sperry & Co., Batavia, Ill., which apply to their annual price list of 1887-88, to which we have recently referred. Terms, 90 days, a discount of 3 per cent. for cash being given if paid within 10 days:

Caldrons, page 13.....40&5
Caldrons, in lots of 5 or more, if shipped direct from factory.....45&5
Casting for setting Caldrons, pp. 18 and 19.....40&5
Bakery Ovens, page 24.....40&5
Sugar Kettles, page 16.....50
Sugar Kettles, in lots of 10 or more, if shipped direct from factory.....55

Extra Finished Hollow-Ware, pp. 24, 25, 26, 27, and 28.....50

Laundry Stoves, page 9.....50

The Dado Mill, page 11.....40

Fruit Boilers, page 4, 5, 6, 7 and 8.....35

Mauls, page 21, made from the best Pig Iron, will stand severe tests, breaking stone and pounding on Iron.....65

Wood-Face Mauls, page 21.....35

Coffee Roasters, page 23.....35

Bake Ovens, Improved Covers, page 22.....50&5

Drug Mortars, page 30.....33 and 34.....35

Miscellaneous Goods, pp. 32, 33 and 34.....35

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Caldrons, in lots of 5 or more, if shipped direct from factory.....45&5

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Bakery Ovens, page 24.....40&5

Sugar Kettles, page 16.....50

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Laundry Stoves, page 9.....50

The Dado Mill, page 11.....40

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Laundry Stoves, page 9.....50

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Mauls, page 21, made from the best Pig Iron, will stand severe tests, breaking stone and pounding on Iron.....65

Trade Report.

only the exception when cash bonuses are paid for orders written at nominal discounts, and that guarantees against a fall of the market are the exception rather than the rule. Such methods of selling must surely be a modern innovation.

In the production of articles like Strap Hinges, mostly done by piecework, it is doubtful if the largest shop has any advantage over the smallest in the way of economy. Large investments of brick and mortar, or unnecessary grandeur of surroundings, are never elements of strength in any enterprise, and must become dangerous points of weakness when from any cause the product of its industry is forced upon the market without profit. The palliations for unprofitableness are available equally to both large and small establishments, in the passing of dividends or reduction of stock, while for both there is but one cure—to sell at a profit or stop. In the last resort the smaller shops must always have a very great advantage over the larger ones, because they can start or stop almost at will. But without caring to canvass individual advantages or misfortunes, considering only the health and prosperity of the trade with which I am identified, I desire to save the Strap Hinge Association from disintegration. If the association cannot harmonize conflicting interests, it may at least repress active discord, and educate the conscience after the manner of him who made the ways of the transgressor hard.

Gentlemen of the Strap Hinge Association, appoint your next meeting at Cincinnati. Notify the trade by postal or circular, and give us obscure workers a chance for reorganization.

One of our subscribers in Newcastle, New South Wales, writes, under date September 6, giving, it will be observed, information in regard to the lines of American goods which are principally sold in that market:

There is a demand for some classes of your goods, principally Carpenters' Tools and the like, such as Saws, Chisels, Hammers, Axes, Hatchets, Locks, Canary Cages, Freezers and all kinds of Woodware, and a few lines of Tinware. Of Cutlery there is a demand for only a few lines, such as Butchers' and Sheath Knives. In Barbers' and Tailors' Shears the demand is very limited. In Tin-smiths' Tools there is a fair demand, as these tools are almost invariably used in the colonies, the colonial workmen preferring them. American Lamps are largely used. With regard to Agricultural Implements I cannot give you any information, as our Newcastle is entirely a coal mining district, and our business is tinsmiths, cutlers, locksmiths, household and furnishing ironmongers. Kerosene Lamps, Burners and Wicks of American make are largely used.

The last issue of an English contemporary contains letters from merchants in regard to the significance of the phrase "monthly terms," concerning which there appears to be some difference of opinion. There is apparently on the other side, as well as here, a disposition on the part of the trade to give such terms a further reach than they properly bear, in order to justify longer credit than should be taken. A London Hardwareman defines the phrase as follows:

We believe that legally, and in the absence of any special custom or agreement, all goods bought during one month are due on the 1st of the following. But, as day-books and ledgers require checking, it has become customary to render statements about the 7th, and to expect payment within 10 days. In the drapery trade, goods bought after the 20th go to the next month's account, but to meet the objection of buyers who order a decent parcel near the end of the month, we have made the terms 30 days from date of invoice. You will deserve the thanks of all wholesale houses if the opening of your columns to this matter leads to anything like uniformity, but we fear that those who now think "monthly terms" mean "pay when you like" will not take the hint given.

A firm in Glasgow, taking a somewhat different view, explain it as follows:

Our experience, covering a period of over 30 years past, is that "monthly payments" mean (in general way) settlement on last cash day of the month following that on which the goods have been invoiced. In Glasgow "cash days" are Tuesdays and Fridays, and the last "cash day" simply means the last Tuesday or Friday of the month, as the case may be. We should say that nineteen out of every twenty business firms pay on the last cash day of the month. The convenience of this is apparent. For large special transactions, where the seller has stipulated for payment by the 10th of the following month, settlement may be so made, but for general monthly accounts, embracing, perhaps, a large number of invoices, we think the Glasgow practice of payment on the last cash day of the month is at once reasonable and convenient. It is often the 9th, even the 10th, before the accounts are received, and it would be expecting too much that the buyer should be able to check, it may be, to 30 such accounts within the time left him if checks on the 10th were demanded.

A well-known manufacturing company writes us concerning the ruling of the Post-Office Department in regard to fourth-class matter, to which we referred in our last issue. They refer to a package recently sent by them, on which, because some matter other than their name and address was on the package, the receiver of the package was obliged to pay 27 cents additional postage. Concerning this they say:

We could have sent this package by express for 25 cents, but in order to insure prompt delivery forwarded it through the mails under the impression that it would go through the same as thousands of other merchandise packages which we have sent through the mails. We were greatly sur-

prised on the following day at receiving notice from the Post Office concerning the enforcement of the regulation prohibiting the printing of anything but the sender's name and address upon packages of fourth-class matter. We regard this regulation as an unreasonable one, and are under the impression that it will be so objected to by the business public.

SOUTHERN FREIGHTS.

The following is the freight classification, as far as it relates to Hardware and Agricultural Implements, for the use of lines between Eastern and Western points and points South, this classification going into effect October 1. The following is the explanation of characters or abbreviations used:

1 stands for first class.
2 stands for second class.
3 stands for third class.
4 stands for fourth class.
5 stands for fifth class.
6 stands for sixth class.
1½ stands for 1½ times first class.
D1 stands for double first class.
3T1 stands for three times first class.
4T1 stands for four times first class.
A, B, C, D, E, F and H stand for classes A, B, C, D, E, F and H respectively.
S stands for special.
LCL stands for less than carload.
CL stands for carload.
NOS stands for not otherwise specified.

The first column indicates the class and the second the class if released.

Agricultural Implements.

Agricultural Implements, CL, not less than 24,000 pounds, owners to load and unload, 4

Agricultural Implements, LCL, as follows:

Cleaners, Cotton Seed.	1½	1	Glass, Window, over 14 x 16 inches and not over 32 x 44.	3	3
Conjurers and Feeders, Cotton Gin.	2	1	Glass, Window, over 32 x 44 inches.	DI	1
Cradles, Grain.	3T1	1	Glue.	3	
Cradles, Grain, KD, in bds. or boxed.	1	2	Glue, Scrap.	5	
Crushers, Corn and Cob.	3		Groceries, completely packed.	2	3
Cultivators, KD, packed.	1		Groceries, completely loose.	1½	1
Cultivators, set up.	3T1	1	Grease, Axle.	6	
Cutters, Ensilage, Straw and Hay, set up.	1½		Hames, in bundles or packed.	6	
Cutters, Ensilage, Straw and Hay, KD, and packed.	3		Hames, NOS, boxed or crated.	4	
Distributors, Guano, set up.	1½	1	Hinges, and Hooks, in barrels or casks.	3	
Distributors, Guano, KD.	2		Hinges and Hooks, in boxes.	2	
Drills, Grain, set up.	1½	1	Hobs, Coal, See Buckets.	2	
Dusters, Brand, set up.	3T1	1	Hollow Ware, loose, LCL.	1	3
Elevators, Hay.	2		Hollow Ware, loose, shipped separately from Stoves, CL, not less than 15,000 pounds to be charged for.	3	5
Evaporators, Fruit.	1		Hollow Ware, packed.	3	4
Evaporators, Sugar.	1		Iron.		
Fans, Wheat.	3T1	1	Iron, Leather.	2	
Feeders and Condensers, Cotton Gin. See Condensers.			Iron Bolts, Nuts, Rivets and Washers in other packages.	2	
Forks, Hay and Manure, in bundles.	3		Iron Sinks, unpacked, released.	2	
Furnace, Evaporator.			Iron Stoves, in barrels or boxes, released.	2	
Gins, Cotton.	2		Iron, tongs, kegs, same as Fence Wire.	5	
Harrows and Harrow Frames.	3		Iron Wedges and Sledges, in barrels.	5	
Harrow Teeth, packed.	4		Jack Screws and Wagon Jacks.	3	
Hoes, in bundles.	3		Kettles, Large Iron.	4	
Hoes, without handles, in barrels or casks.	2		Lamps and Lamp Goods, packed.	2	3
Horse Powers, KD.	2		Lanterns, See Glass.		
Horse Powers, Railroad or Endless Chain.	1½		Lead, Bar or Sheet.	5	
Hullers, Cotton Seed and Clover.	1½	1	Machines, Meat Cutters.	2	
Incubators, KD, packed.	DI		Mills, Coffee and Paint, set up.	2	
Incubators, set up.	3T1	1	Milk, Cotton Seed.	2	
Cutters, Ensilage, Straw and Hay, set up.	1½		Nails, Brass and Copper, well packed, in boxes or kegs.	2	
Cutters, Ensilage, Straw and Hay, KD, and packed.	3		Nails, for Horse or Mule Shoes, in boxes.	5	
Dusters, Brand, set up.	3T1	1	Nails and Spikes, Iron, in bags.	3	
Elevators, Hay.	2		Nails and Spikes, Iron, in boxes.	2	
Evaporators, Sugar.	1		Nails and Spikes, Iron, in kegs. See Iron.	2	
Fans, Wheat.	3T1	1	Oakum.	4	
Feeders and Condensers, Cotton Gin. See Condensers.			Packing, Asbestos, in cases.	2	
Forks, Hay and Manure, in bundles.	3		Packing, Asbestos, in rolls.	4	
Furnace, Evaporator.			Packing, Hemp.	4	
Gins, Cotton.	2		Packing, Metals.	2	
Harrows and Harrow Frames.	3		Packing, Rubber.	3	
Harrow Teeth, packed.	4		Paints, bulk, in barrels or casks dry.	6	
Hoes, in bundles.	3		Paints, bulk, in barrels, casks, kegs or bags.	5	
Hoes, without handles, in barrels or casks.	2		Paints, in pairs or cans packed.	3	
Horse Powers, KD.	2		Paints, in pairs or cans, unpacked.	3	
Horse Powers, Railroad or Endless Chain.	1½		Paints, Metallic, same as Paints.	1	
Hullers, Cotton Seed and Clover.	1½	1	Pipe, Copper, Brass or Metal NOS.	1	
Incubators, KD, packed.	DI		Pipe, Copper, Brass or Metal, NOS, b. xed.	3	
Incubators, set up.	3T1	1	Pipe, Lead, in rolls or reels.	4	
Cutters, Ensilage, Straw and Hay, set up.	1½		Pipe, Lead, in casings.	5	
Cutters, Ensilage, Straw and Hay, KD, and packed.	3		Pipe, Lead, Iron, Spiral.	1	
Dusters, Brand, set up.	3T1	1	Pipe, Stove.	DI	
Elevators, Hay.	2		Pumps and Pump Material, wooden, LCL.	3	
Evaporators, Sugar.	1		Pumps and Pump Material, wooden, CL.	4	
Fans, Wheat.	3T1	1	Pump, Hand, not packed.	1	
Feeders and Condensers, Cotton Gin. See Condensers.			Refrigerators, packed or wrapped.	2	
Forks, Hay and Manure, in bundles.	3		Refrigerators, thoroughly and completely taken apart and and packed in sections.	2	
Furnace, Evaporator.			Rope, NO.	3	
Gins, Cotton.	2		Rope, Bed Cord.	3	
Harrows and Harrow Frames.	3		Rope, Clothes Line.	3	
Harrow Teeth, packed.	4		Rope, Wire.	4	
Hoes, in bundles.	3		Sadirons, packed in barrels or casks. See Iron.	2	
Hoes, without handles, in barrels or casks.	2		Sadirons, packed in boxes.	2	
Horse Powers, KD.	2		Saws, Circular, packed.	2	
Horse Powers, Railroad or Endless Chain.	1½		Saws, Drag.	1½	
Hullers, Cotton Seed and Clover.	1½	1	Saws, Drag, with Horse-Power.	5	
Incubators, KD, packed.	DI		Saws, NOS, packed.	1	
Knives, Hay, packed.	2		Scales and Scale Beams, unboxed, wrapped.	1	
Latches, Hemp.	1		Scales and Scale Beams, KD, packed.	2	
Machines, NOS.	3		Scythe Stones.	3	
Machines, NOS. See Machines.			Shears, in bags or boxes.	2	
Middlings, Purifiers.	3T1	1	Shot, in kegs or double-sacked.	6	
Mills, Burr Stone, Portable.			Sportman's Flying Targets, in boxes and barrels.	1	
Mills, Cane, Corn, Hominy and Sorghum.	3		Springs, Wire, packed in barrels.	2	
Mills, Fan.	3T1	1	Steeleyards, KD and packed.	2	
Mills, with Trailed Sugar.	3T1	1	Steeleyards, unboxed.	3	
Mills, NOS. See Mills.			Stove Boards, boxed or crated.	3	
Mowing and Reaping Machines, Binders and Harvesters, whether combined or separate, KD and partly boxed.	3		Stoves, Gas and Oil, boxed.	1	
Mowing and Reaping Machines, Binders and Harvesters, whether combined or separate, set up.	1½		Stoves, Stove Plates and Stove Furniture and Hollow Ware, LCL.	1	3
Mowers, Lawn.	1		Stoves, Stove Plates and Stove Furniture in Hollow Ware, CL, not less than 20,000 pounds.	5	
Planters, Corn and Cotton, KD, in bundles or boxes.	2		Tacks.	2	
Planters, Corn and Cotton, set up.	1½		Ties, Cotton and Hay.	A	
Plow Irons, Mold Boards, Plow Plates, Points, Wings, Castings and Steel. See Iron.			Tin Plate, in boxes.		
Ploys, Gang and Sulky.	3T1	1	Tin Roofing, in rolls.	5	
Ploys, Gang and Sulky, KD.			Tinners' Trimmings, NOS.	2	
Ploys, NOS, KD.	1	2	Tinware and Tin Stamped Ware, boxed.	3	
Presses, Hay and Cotton, set up.	DI		Tools, Edge.	5	
Presses, Hay and Cotton, KD.	DI		Traps, Fly.	1	
Presses, Hay and Cotton, set up.	DI		Traps, Mice and Rat.	1	
Presses, Hay and Cotton, KD.	DI		Trucks, Warehouse.	1	
Rakes, Hand, in bundles.	3		Wire, Binding.	4	
Rakes, Horse, set up.	3T1	1	Wire, Cloth.	1	
Rakes, Horse, KD.	1		Wire, Goods, boxed, NOS.	1	
Rollers, Field and Road.	3		Wire, Screens.	4	
Scrapers, Road and Pond.	3		Wire, Telegraph.	4	
Scythes, in bundles.	1		Wire, NOS.	3	
Scoops, in boxes.	2		Wire Work, Racks, Stands, Vases, Signs and Figures, boxed or crated.	3T1	1
Scythes, Sledges.	1		Wire Work, Woven, Table, Toilet and Household Articles, boxed or crated.	DI	1
Separators. See Threshers, Agricultural Implements.			Wood Screws, in cases or boxes.	2	
Shellers, Corn.	1				
Shovels and Spades, in bundles.	3				
Spreaders, Manure, set up.	1½	1			
Spreaders, Manure, KD, boxed.	2				
Sulky Plows. See Plows, Agricultural Implements.					
Threshers and Separators.	1				
Wheelbarrows, Iron.	3</				



L. COES'
GENUINE IMPROVED
Knife Handle
PATENT
Screw Wrenches
MANUFACTURED BY
L. COES & CO.,
Worcester Mass.
ESTABLISHED IN 1839.
Patented July 6, 1880. Patent July 8, 1884.
Registered March 31, 1884.
The Best Made and Strongest Wrench in the Market.
Send for Illustrated Price List and Circular.
J. C. McCARTY & CO.,
NEW YORK,
Sole Agents.

Hardware Dealers Take Notice,

and buy where you can get the best quality at the lowest price, thereby not only satisfying your customers, but also putting money in your own pocket.

Our Eureka Patent Flexible Back Saws, the teeth of which are hard, the back being soft, thereby preventing them from breaking in two, have been greatly improved and are giving the best satisfaction. Our Crescent brand of Hack Saws are hardened all through with uniform temper, and are the best Hack Saws so tempered.

We are now preparing to supply the wants of the trade according to their preference. Hardware Dealers run no risk by buying from us either our Eureka or Crescent brand of Hack Saws on our recommendation, as we give them the option of returning the first lot to us at our own expense any time within three months from date of invoice. Correspondence solicited.

Henry G. Thompson & Sons,
Cor. Elm and State St., New Haven, Conn.,
—MANUFACTURERS—

Flexible Back Band Saws for Cutting Metals,
Hack, Meat and Kitchen Saws and Frames.

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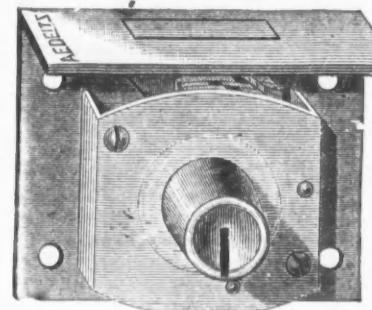
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W. J. WILDER'S PATENT, March 10th, 1885.

A New Metal especially adapted for Roofing, Lining Refrigerators, the Manufacture of Britannia Ware and all Articles where Spun Metals are Required. An excellent Substitute for Tin Copper and White Metals.

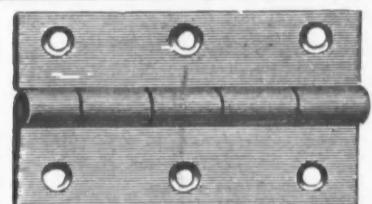
LANE'S MEASURING FAUCET.
Price, \$8.00.
or Light or Heavy Molasses, Oils,
Varnishes or other Fluids.
We warrant these Faucets to be as represented, measuring correctly and working more easily in heavy molasses than any Measuring Faucet in the market. No grocer can afford to be without them, for they save time and money. They are in every respect convenient, requiring no funnel to collect dirt and draw fluid. They do not drip. They prevent all waste, as no molasses or other fluid can pass except when the crank is turned. They are the only Measuring Faucets in the market that are always correct. They work easily in the heaviest molasses. They are warranted to measure correctly, according to U. S. Standard.
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BEST OAK BELTING
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MANUFACTURERS OF
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THE LEVIATHAN
COTTON
BELTING.
Unsurpassed for
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Cheapness.
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Width and Strength
Main Driving Belts.
Guaranteed to Run
straight, Even Through-
out.
No Cross Joints, Un-
affected by Damp,
Cling well to the Pulley,
Has no equal. In fact,
is THE BELT.

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COMPANY,

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(Iron Frame.)

Fully Warranted. Has Patent Adhesive Rolls,
Best Steel Springs, Malleable Iron Crank.

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Non-Corrosive

PRIMING and FINISHING PAINT

For Engines, Machinery, &c.

This paint being entirely free from acid
will not corrode or rust the iron.

PATENT IRON FILLING.

A composition or filling for Tools, Machinery, Engines, Locomotives, Tenders, Iron Ships, and all iron work for buildings, inside or out. Send for sample card, price list and testimonials.

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Nos. 136, 138 and 140 N. 4th St., Philadelphia.

Patent Portable Rope Hoist.
The best quick lift made. Quickest,
lightest and cheapest.
Three sizes 500, 10, 0 and 2000 lbs. Just
the thing for quick lifting & lowering.
Send for descriptive circular and refer-
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in any place can have all the trade in
BUTCHER SAW BLADES

if he will take the trouble to show the Star Blades to the Butchers and permit them to try their quality. There is not a single place where these Blades have been used that they have not taken and held the market. They can be sold for 10 Cents each, and that is less than the cost of filing a common saw. They are so hard that one will cut three or four times as long as the saws now in use without filing. As these Saws are not to be filed, and as one only lasts a few months before getting dull, a great many of them are wanted. They are listed on the 50th page of our new Catalogue which we will send on demand.

MILLERS FALLS CO., 93 Reade St., New York.

STAR BUTCHER ★ SAW BLADES.

Length.	Width.	Gauge.	Teeth to Inch.	Per Dozen.
14 and 16 in.	$\frac{1}{2}$ in.	24	9 $\frac{1}{2}$	\$1.08
18 " 20 "	$\frac{1}{2}$ " 24	9 $\frac{1}{2}$	1.20	
22 " 24 "	$\frac{3}{4}$ " 24	9 $\frac{1}{2}$	1.32	



CHAMPLAIN
Forged Horse Nails.
MANUFACTURED BY THE
NATIONAL HORSE NAIL CO.,
Vermont.
HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST
NORWAY IRON AND WARRANTED.
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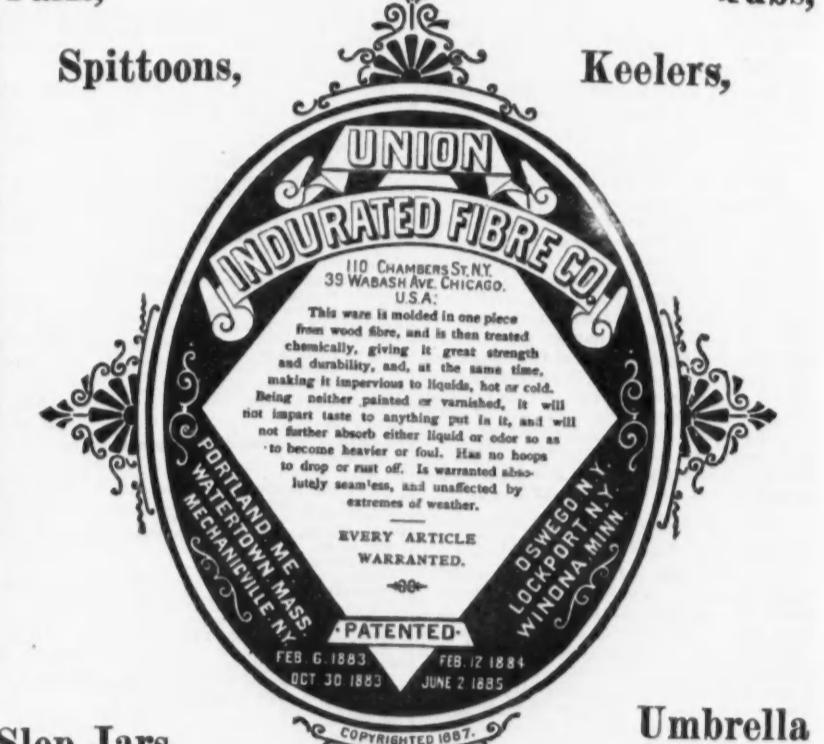
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Pails,

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Umbrella
Stands,

Milk Pans.

BRASS GOODS MFG. CO.,
Manufacturers of Stamped Brass, Silvered and Tin Goods, Hyatt's Patent Brass and Iron Spring Bolts, Bronze and Plated Thimbles, Roses, Plate Escutcheons, Socket Shells, &c., Mucilage Brushes, Patent Mirror Pin Cushion Business Cards Mirrors for Perfume Bottles, Hyatt's Patent Sensible Safety Pins. Novelties of New Designs made to order.

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WALPOLE

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SOUTH WALPOLE, MASS.

October 13, 1887.

Trade Report.

Cleveland.

CLEVELAND, October 10, 1887.

Iron Ore.—Dealers are beginning to speculate on the outlook for next season. It is generally admitted that prices will be considerably lower than existing quotations. The score or more of new ships which will be put in the ore-carrying trade will demoralize the pool which now succeeds in keeping lake freights at such exorbitant figures. The active demand for vessels during the past week has broken down the \$2.50 limit from Ashtabula to lower lake ports, and charterers have been made at \$2.60, with a probability of \$2.75 being paid this week. The Marquette rate has also been forced above \$2, and the Escanaba rate seems likely to reach \$1.80 before the close of navigation. The vessel owners have the matter practically in their own hands. Their season contracts have expired and they can now fix their own rates. The mine owners are desirous of delivering all the ore possible before winter stops its transportation. It will be impossible in many cases to completely fill the orders booked three or four months ago but the furnaces will be much better supplied than has been generally supposed. It seems quite imperative that there shall be some changes in Ore quotations during the coming buying season and that these changes favor the purchaser. It is claimed by Pig Iron men in this vicinity and in the district receiving Ore from this port that Ore prices are from 10 to 20 per cent. too high, and that the manufacture of Iron is absolutely unprofitable. The Ore receipts at Ashtabula harbor have been tremendously heavy this season, and the annual report from that now important port will surprise every one interested in the Ore trade. The receipts at Cleveland for the week and to date for this year and last were as follows:

Receipts.	Shipments.
1887. 1886. 1887. 1886.	
For week.... 47,000 25,000 21,000 14,500	
To date.... 1,062,700 609,800 633,000 124,900	

Pig Iron.—The market is very stiff, and the inquiry for No. 1 Foundry Iron is heavy. Some difficulty is being experienced in securing Coke, the railroads being again short of cars. In many cases where 50 cars are asked for only 15 are obtained. The furnaces are kept running, however.

Old Rails.—The market is still weak, about \$24.50 being a fair quotation for Old Americans. A small lot of T's sold during the week for \$25.25.

The present stringency in the money market was illustrated last week when \$190,000 of Cleveland city bonds were offered the public at 4%. Heretofore these bonds have brought a handsome premium, but not a single bid was received for the present lot. The rate of interest will be increased to 5%.

Louisville.

LOUISVILLE, KY., October 10, 1887.

Pig Iron.—While there has been no marked break in prices during the past week, the market has been somewhat weak. While parties here are fearful that money will be tight, it cannot be stated that any decided impression has occurred in this market, but the market seems to be in such condition that very little would affect it either way. Conditions favoring an advance would immediately strengthen the market; but, on the other hand, a decided depression might ensue if the feeling in business circles should become any more unsettled than at present. There has been considerable difficulty in placing Car-Wheel Irons at prices heretofore prevailing, and some small sales have been made at lower prices. There seems now to be a prospect for moving some of the Iron which has been stocked at furnaces which depend upon water for transportation. Some of the rivers are rising, and resumption of navigation will release considerable quantities of both foundry and mill Irons which have all summer been excluded from the market. Inquiries are being made for these Irons for future deliveries. Some of the choice brands which have railroad transportation continue scarce, furnaces which are in operation being largely sold ahead. The opening of other furnaces will tend to relieve this scarcity, but current consumption will doubtless use up the entire product, thereby preventing an accumulation of stocks. The stocks generally in buyers' yards are unprecedentedly low, as are also the stocks at furnaces. The anticipated tightness in the money market causes those buyers to hold back on large purchases for deliveries ahead, but many of our conservative merchants think that the anticipated tightness will not be realized. If this be the case, these buyers will come into the market for round lots, and will find favored brands scarce and only obtainable at full prices. If, however, a stringency should ensue in the money market, it will of course have the effect of making sales small. Such furnaces as have Iron undisposed of may then be willing to make concessions to meet the condition of the market. The outlook, however, in this respect at the time of writing is uncertain, but, as above stated, the best authorities are of the opinion that money will be easy and prospects generally

brighter. Very few large sales have been booked during the past week.

Pig Iron.	
Southern Coke, No. 1 Foundry	20.50 @ \$21.00
" No. 2 "	19.50 @ 20.00
" No. 2½ "	19.00 @ 19.50
Hanging Rock, Coke, No. 1 Foundry	21.00 @ 21.50
Hanging Rock, Charcoal, No. 1 Foundry	21.00 @ 25.00
Southern Charcoal, No. 1 Foundry	21.00 @ 22.00
Silver Gray different grades	18.00 @ 19.50
Southern Coke, No. 1 Mill, Neutral	17.75 @ 18.25
" No. 1 " Cold Short	17.00 @ 18.00
Southern Charcoal, No. 1 Mill	18.00 @ 19.00
White and Mottled, different grades	15.50 @ 16.00
Southern Car-Wheel, standard brands	25.00 @ 26.00
Southern Car-Wheel other brands	22.00 @ 24.00
Hanging Rock, Cold Blast	25.50 @ 25.50
Warm Blast	22.00 @ 23.00

W. B. BELKNAP & Co., Louisville, report as follows, under date of October 10, 1887: Business maintains a good volume, and the railroads still continue crowded, inasmuch as the recent rainfalls have been far too light to affect navigation. There have been no boats on the river above Cincinnati for a month or more now, and all of the immense tonnage of the Ohio River mills from Wheeling down has been thrown on to the railroads. Business locally received a certain stimulus by reason of the State Industrial and Commercial Convention, which has just closed. The papers presented were both interesting and profitable, and a new belief in the future of our almost undeveloped State was readily encouraged by the 400 delegates present. W. D. Kelley's address to the convention was one of its chief features.

Bar Iron.—Is still jobbing freely, and mills claim to be full of orders.

Hoops and Bands.—Are a trifle weaker, but so many of the mills which used to confine themselves to the manufacture of this grade of Iron have undertaken other specialties that there is little significance to be attached to change of one.

Nails.—The fair weather and large building operations have led to large consumption, but nails are still in plentiful supply, with no signs of scarcity.

Wire.—Prices are low and buyers seem to appreciate the fact, for they are buying for all reasonable needs without stint.

We were shocked to hear of the death of Mr. F. Wiesbusch. He had a large personal acquaintance in our city, and that and his business connections, which were also general, served to maintain the high esteem in which he was always held.

St. Louis.

ST. LOUIS, October 10, 1887.

Pig Iron.—A decided improvement has taken place in the Pig Iron market since our last report. Some buyers who have been holding off, fearing a decline, have gone in the market. Others are making inquiry for Iron to cover large contracts that have been taken. The castings for the cable roads have been about completed, though it is understood that other contracts will be let within the near future, which will keep the foundries prepared to take this class of work busy through the spring. The furnaces all report their books full of orders. In many cases contracts for Iron are not sufficient to cover contracts taken by the foundries, and those who are not covered have found it troublesome to secure Iron. Last week's quotations remain unchanged, cash on cars East St. Louis:

Southern Coke, No. 2 Foundry	20.50 @ \$21.00
Southern Coke, No. 1 Mill	19.75 @ 20.50
Southern Coke, No. 2 Mill	18.50 @ 18.75
Southern Charcoal, No. 1	22.50 @ 22.50
Southern Charcoal, No. 2	21.00 @ 21.50
Southern Charcoal, Car-Wheel	25.00 @ 25.50
Missouri Charcoal	20.75 @ 21.50
Ohio Softeners	22.00 @ 22.50

Iron Ore.—Some of the furnaces tributary to this market are figuring on contracts for Ore to be delivered throughout the next six months, and some good contracts have been made since our last report. All the mines are running full.

Old Rails.—The market is sluggish. Rails are quoted at \$25, cash, on cars East St. Louis. Holders would be disposed to shade this figure on a good contract.

Old Wheels.—Are quoted at \$22 @ \$22.50. **Bar Wire.**—The situation remains the same as reported last week. The quotations are \$1.15 for Galvanized, \$3.65 for Painted.

Nails.—The market is quiet, though all seem agreed that prices have reached the bottom, \$2.15 East St. Louis.

Scrap.—No. 1 Cast, \$13.50 @ \$14.50 net ton; Stove Plate and Burnt Iron, \$9 @ \$10; No. 1 Wrought, \$18 @ \$19.50 net ton. The market shows an improvement.

Connellsville Coke.—The situation has improved a little; prices remain \$6.15 East St. Louis, \$9.05 Missouri River Points.

Detroit.

CHARLES HIRNOD & Co., dealers in Iron, Detroit, Mich., report under date of October 10, 1887, as follows: The past week has shown less activity in Pig Iron than for some time past; very few orders have been booked and those of small quantity. Prices all over are firm, and considerable business is expected between now and the close of navigation. In the meantime all of the furnaces are busy shipping on orders taken in the past, and there will be comparatively few unfilled orders among the Charcoal men after the close of navigation. Southern furnaces still report no iron to be had for immediate delivery, while the Northern Coke makers, finishing up some Bessemer contracts and turning their plants upon Foundry Iron, give considerable more Iron for this market than they have been able to do at any time since the 1st of May. We repeat our quotations of a week ago, which are as follows:

Lake Superior Charcoal, all numbers	22.00 @ \$22.00
Lake Superior Coke, All Ore	22.50 @ 23.50
Lake Superior Coke, Cinder Mixed	21.50 @ 22.50
Lake Superior Coke, Blackband	22.50 @ 23.50
Southern No. 2	21.50 @ 22.50
Southern Silvery	21.00 @ 22.00
Jackson County, Ohio, Silvery	22.00 @ 22.50
American Old Iron Rails	24.00 @ 25.50
Old Wheels	22.00 @ 22.50

MANUFACTURING.

IRON AND STEEL.

The annual meeting of the stockholders of the Pennsylvania Steel Company, of Steelton, Pa., was held in the Philadelphia office of the company, at No. 208 South Fourth street, on Wednesday, the 5th inst. It was decided to increase the capital stock from \$2,500,000 to \$3,000,000 and to create a mortgage of \$1,000,000 on the property. The following directors were elected: Samuel M. Felton, Edmund Smith, Charlemagne Tower, W. M. Speakman, H. H. Houston, Luther S. Bent, George Small. The directors re-elected the present officers, as follows: President, Samuel M. Felton; vice-president and general manager, Luther S. Bent; secretary and treasurer, Evan F. Barker; F. W. Wood, superintendent, and E. C. Felton, assistant superintendent.

It is expected that the number of men employed at the Eastern Forge Company, Portland, Me., will soon be increased, and the works run day and night. Five heavy hammers (one of them weighing 6 tons) are in constant use. A new building, 70 x 40 feet, is being built on the premises for the purpose of holding scrap iron, the wharf accommodations are being enlarged, and other extensive improvements are in contemplation.

Bessemer Mill No. 1, of the Pennsylvania Steel Company, at Steelton, Pa., closed down on the 1st inst. for the purpose of making a number of needed repairs.

Mr. M. C. Williams, for several years superintendent of the mills of Andrews Bros. & Co., at Hasletton, Ohio, has resigned, having purchased a rolling mill at Burlington, Iowa.

A new fan has been ordered for the blast furnace of the Stewart Iron Works, at Sharon, Pa., and will be put in as soon as possible. Furnace No. 2 of the above company, which was blown out recently for repairs, will resume operations about the middle of November.

The steam forge of the Reading Iron Works, Eighth and Greenwich streets, Reading, Pa., has been supplied with an additional hammer. Owing to the fact that a heavy order for iron was received for the Baldwin Locomotive Works, Philadelphia, the facilities of the forge had to be increased. The iron to be turned out will nearly all be used in the construction of 100 locomotives at the Baldwin works.

After a suspension of five months, during which time needed repairs to the furnace and machinery of the Keystone Rolling Mill Company, of Reading, Pa., were made, the entire plant is again in active operation.

The Milwaukee Bridge and Iron Works, of Milwaukee, have secured the contract for the erection of an iron bridge, 2000 feet long, to extend from Detroit to Belle Isle Park, which will cost \$28,000.

Lindsay & McCutcheon, proprietors of the Star Iron Works, at Allegheny City, Pa., who were recently compelled to close down their works for a short time on account of a shortage of natural gas, have signed a contract with the Allegheny Heating Company to supply them in the future with gas. The works are now running full in all departments.

Fayette Brown, receiver of Brown, Bonnell & Co., of Youngstown, Ohio, has filed his report in the United States Circuit Court for the month of September. It is as follows: On hand August 1, \$8,938.43; receipts for the month, \$20,577.66; aggregate, \$22,516.09; disbursed, \$202,338.41; on hand August 31, \$27,177.68.

The Oil City Boiler Works, at Oil City, Pa., have just made a contract for \$40,000 iron work for the Omaha and Council Bluffs Bridge Company, which will be used in a bridge across the Missouri river. The weight of iron will be between 700,000 and 800,000 pounds.

The blast furnace at Swedeland, in Upper Merion township, Montgomery County, Pa., is idle again, having been blown out last week. The reason for this, it is said, is in the fact that the hot blast did not work satisfactorily, rendering it impossible to produce the quality of iron desired. The furnace belongs to the Philadelphia and Reading Coal and Iron Company, and is leased by the Messrs. Hecksher. It is thought they will not put the furnace in blast again for some time. They have been operating it about four months.

Chas. F. Taylor, chairman of the Continental Tube Works, at Pittsburgh, resigned his position with that company on the 1st inst.

In answer to the report which is being extensively published that the Springfield Iron Company, of Springfield, Ill., had been compelled to close down their works on account of the strike of the coal miners, we are informed that there is no truth in the report whatever. In their advices the company say: "We have run our works every turn in spite of the coal strike."

Under date of October 5 the Blandon Rolling Mill Company, of Blandon, Pa., write us as follows: "The Blandon Rolling Mill was formerly owned and operated by the Maidencreek Iron Company. It is now owned and operated by L. Frontenac, of New York City, under the above name. We started upon the 3d inst. and are now running all departments on double turn, employing about 175 men, and will make about 8000 tons of finished iron per year. The entire plant has been put in thorough repair."

Under date of October 3 O. W. Davis, Jr., general manager of the Katahdin Charcoal Iron Company, of Bangor, Me., writes us as follows: "We are now out of blast and rebuilding our stack, enlarging from 50 x 9, as before, to 50 x 11 feet. We expect to be in blast again fast of this month, with capacity of 20 to 25 tons daily of high grade charcoal iron. This enlargement is made in view of the early completion of the Canadian Pacific Railway extension, now building from Montreal to St. John's, directly across the State of Maine. This will give us a direct outlet to Chicago and all points

between, at rates as low or lower than from a number of Alabama and Tennessee charcoal iron furnaces."

The Linden Steel Company, Limited, of Pittsburgh, have recently produced some very large steel plates. On Saturday, the 1st inst., among other large armor plates for the United States Government's new cruisers, one was rolled weighing almost 10,000 pounds. The dimensions of this plate are 10 feet long by 6 feet wide, and 2 inches thick. It is claimed to be the heaviest steel plate ever rolled on this side of the Atlantic. Mr. D. W. Loomis, secretary of the Linden Company, has furnished us with the following particulars regarding the above-mentioned plate: The plate is one of a number we are rolling for the U. S. cruiser Baltimore, building at the yards of the Wm. Cramp & Sons Ship and Engine Building Company, at Philadelphia. They are unquestionably the largest steel plates ever rolled in this country, and are subjected to the most severe tests, which at first troubled the manufacturers very greatly, but we overcome them very soon, and are now doing very much better than is required. We are now completing the contract of the plates for the Baltimore, and will commence very shortly on the armor or protective deck plates for the two new cruisers lately awarded the Messrs. Cramp & Sons. We anticipate no further trouble, and are arranging to roll even heavier plates than the one mentioned if called on to do so. We have recently put in some massive machinery to furnish these plates, and believe we are as well or better fitted to do it than any other concern on this side of the Atlantic.

An explosion in the puddling mill of the Brooks Iron Company, at Birdsboro, Pa

Imports.

The Imports of Iron and Steel, Hardware, &c., at this port from October 4 to October 10, inclusive, were as follows:

Iron and Steel.	
Pig Iron:	Crocker Bros. 1,300
A. Milne & Co.	1,087
Naylor & Co.	190
G. W. Stetson & Co.	350
N. S. Bartlett	200
Hederson Bros.	110
Iron Ores: J. W. Ceballos & Co.	2,353
Re. D. Flores	831
Spiegelstein: Naylor & Co.	1,302
J. Abbott & Co.	800
Crocker Bros.	261
C. L. Pier & Co.	25
Old Iron Rails: Dann & Co.	500
G. W. Stetson & Co.	310
James E. Pope, Jr.	157
Neumark & Gross	250
Steel: W. F. Wagner	38
J. Abbott & Co.	5
J. A. Coe	23
C. Hugill	50
G. Lundberg	4
C. F. Boker	11
C. W. Power	4
R. H. Wolff & Co.	11
Steel Rods: Naylor & Co.	1,832
Care & Moen	30
R. H. Wolff & Co.	302
Iron: G. Lundberg	180
Milne Schall & Co.	28
J. Abbott & Co.	30
A. R. Whitmey & Co.	30
Steel Blooms: Naylor & Co.	1,663
Steel Bullets: Naylor & Co.	10
Steel Plates: Union Bridge Company	63
H. F. Downing & Co.	136
Steel Crop Encls: Naylor & Co.	204
A. M. Moore & Co.	204
Sheet Iron: Milne & Co.	40
Steel Forgings: Thos. Prosser & Son	40
Steel Nail Rods: J. Abbott & Co.	25
Naylor & Co.	200
Wire Rods: G. Lundberg	50
Sheet Iron: T. B. Coddington & Co.	30
Rivet Rods: J. Abbott & Co.	7
G. Lundberg	131
Charcoal Iron: A. Milne & Co.	21
Iron Girders: F. Downing & Co.	115
Old Fish Plates: L. Lissberger	45
Cotton Ties: F. Downing & Co.	50
H. E. Cooleged	50
Ferromanganese: Naylor & Co.	49
Russia Sheet Iron: Bruce & Cook	13,355
Tin Plates	
Phelps, Dodge & Co.	14,965
Dickerson, Van Duzen & Co.	8,067
Naylor & Co.	5,811
Bruce & Cook	4,487
A. L. Thompson & Co.	3,294
N. L. Cort & Co.	2,949
T. B. Coddington & Co.	2,738
Pratt Mfg. Co.	1,754
Wolff & Reesing	1,481
G. B. Morewood & Co.	644
H. Whittemore & Co.	495
H. Morris & Co.	220
H. Brooks & Co.	1,366
H. R. DeMitt & Co.	1,416
Merchant & Co.	246
Metals	
Tin: Phelps, Dodge & Co.	105,670
American Metal Co.	52,624
D. Thomsen & Co.	22,426
Lead: American Metal Co.	381,078
Casks	
Antimony: Phelps, Dodge & Co.	40
Hardware, Machinery, &c.	
Boker, Hermann & Co., Hdw., cs., 10; Mdse., cs., 4	
Dolge, Alfred, Mdse., cs., 18	
Ellsworth & Westervelt Mach'y, cs., 2	
Field, Alfred & Co., Mds., cs., 11; Avilis, 27; Bedsteads, 10; Pincushion Caps, cs., 14	
Frost, F. & Co., Hdw., cs., 8	
Graef Cutlery Co., Mds., cs., 14	
Hartley, Graham & Co., Mds., cs., 38	
Jackson, R. D. & Co., Guns, case, 1	
Johnson, John & Co., Mach'y, pcs. and pkgs., 84	
Kastor, A., Cutlery, cs., 7	
Lazarus & Rosenfeld, Hdw., &c., cks., 70	
Lewis & Conger, Hdw., cs., 1	
McCoy & Sanders, Mds., cs., 4	
Morris, L. W. & Son, Hdw., case, 1	
Schoeniger, D. & Sales, Guns, cs., 4	
Stewart, W. G., Mds., cs., 14	
Taylor, Thos., Mds., cs., 2	
Pin, Forwood & Co., Hdw., pkgs., 5	
Ward, Asline, Mdse., cs., 4	
Wielusch & Hilger, Mdse., cs., 9	
Witte, John G. & Bro., Mdse., cs., 10	
Order-Hdw., cs., 3; Mach'y, pkgs., 74; Hollow Ware, cs., 5; Ironware, pkgs., 82; Wire Laths and Nails, cs., 12; Steelware, cs., 34	
Irons and Metals Warehoused from October 4 to October 10, inclusive.	
Tons.	
Old Iron Rails: Martin & Co.	1,718
Dana & Co.	740
Stroud & Co.	497
Exports of Metals from October 4 to October 10, inclusive.	
Pounds.	
Copper Matte: Williams & Terhune	1,851,801
Copper: American Metal Co.	50,000
H. Nichols & Co.	19,000
Old Iron: Burgeass & Co.	31,320
Old Copper: Burgeass & Co.	9,300
Old Copper: Burgeass & Co.	28,736

Old Metals, Rags, &c.

The purchasing prices offered by dealers are as follows:

Heavy Copper	W. lb.	@@ \$0.07
Light Copper	W. lb.	@@ .06
Copper Bottoms	W. lb.	@@ .06
Brass, Heavy	W. lb.	@@ .06
Brass, Light	W. lb.	@@ .04
Combination	W. lb.	@@ .084
Lead, Heavy	W. lb.	@@ .036
Lead, Heavy	W. lb.	@@ .04
Tea Lead	W. lb.	@@ .03
Zinc	W. lb.	@@ .034
Wrought Iron	W. ton, 22,00	@@ .00
Light Iron	W. ton, 12,00	@@ 13.00
Stove Plate Iron	W. ton, 12,00	@@ 10.00
Machinery Iron	W. ton, 15,00	@@ 16.00
Grate Bars	W. ton	@@ 7.00
Old Rubber	W. lb.	@@ .044
White No. 1.	W. lb.	@@ .05
White No. 2.	W. lb.	@@ .048
Canvas, Linen, No. 1.	W. lb.	@@ .014
Cotton, Cotton, No. 1.	W. lb.	@@ .044
Canvas, No. 2.	W. lb.	@@ .028
Seconds	W. lb.	@@ .01
Soft Woolens	W. lb.	@@ .061
Mixed Rags	W. lb.	@@ .01
Gunny Bagging, No. 1.	W. lb.	@@ .024
Jute Butts	W. lb.	@@ .024
Book Stock	W. lb.	@@ .005
Newspapers	W. lb.	@@ .004
Wool	W. lb.	@@ .004
Kentucky Bagging	W. lb.	@@ .034
Kentucky Hair Rope	W. lb.	@@ .024
Kentucky Bagging	W. lb.	@@ .034
Kentucky Bagging	W. lb.	@@ .04
Kentucky Bagging	W. lb.	@@ .034

Coal Market.

The miners' strike in the Lehigh region operates as a serious derangement to trade, some of the Coal companies being pressed with orders far beyond their ability to execute, and consumers, more especially among the Iron furnaces, being put to serious inconvenience where supplies are exhausted. Operators beyond the limits of the disaffected region are unable to respond immediately to the unexpected demands upon them for Coal, and naturally give precedence to their regular customers. Should relief not come soon the close of navigation will throw into Eastern channels the large shipments now in urgent demand for the West. The prospects for an adjustment of the labor difficulty are no brighter.

President Harris, of the Lehigh Coal and Navigation Company, on Monday replied to a committee of miners that the advanced wages demanded would not be granted. Mr. Harris declared that, in consequence of the increase made in the wages of the miners in the Schuylkill region, the price of coal had been advanced to a figure that had incensed the public, and that, as the Lehigh Navigation Company did not intend to advance the price of Coal, the company could not grant any addition in its rate of wages to the miners. According to President Harris, the miners in the Lehigh region work upon a sliding scale, receiving an increase of pay with every legitimate rise in the price of Coal. The Lehigh Navigation and the Lehigh Valley companies occupy what is known as the Lehigh Anthracite region, and both resist the demands for increased wages. The leading Anthracite operators, report says, feel safe in predicting that there will be no settlement of the strike this year, in which case the scarcity of supplies now existing will be felt for some time to come.

The advanced prices recently announced in some cases are fully maintained, and quotations are as follows: Free Burning White Ash, Broken, \$3.80; Egg, \$4; Stove, \$4.35; Chestnut, \$4.25; Pea, \$3; Pittston is 15¢ @ 20¢ per ton lower, except Pea, which is \$3.20; Reading Hard White Ash, Broken and Chestnut, \$4; Egg, \$4.25; Stove, \$4.50; Pea, \$2.60. The so-called fancy brands are \$4.75 @ \$5.25, according to size.

It will be seen that despite the cry of short supplies the production of the mines is considerably in excess compared with last year. For the week the several companies report 674,121 tons, an increase of 20,058 tons, and since January 1 25,465,000, an increase of 2,555,000 tons.

Bituminous Coal is active at \$3.60 along side in New York, with a firmer tendency, and the Eastern demand is brisk. Coke is in more active demand than had been anticipated, and a heavier trade is reported in the Connellsville region than before since July. Shipments from the Cumberland Bituminous Coal region for the week were 82,179 tons, and for the year 2,370,113 tons, an increase of 614,156 tons as compared with the corresponding period of 1886.

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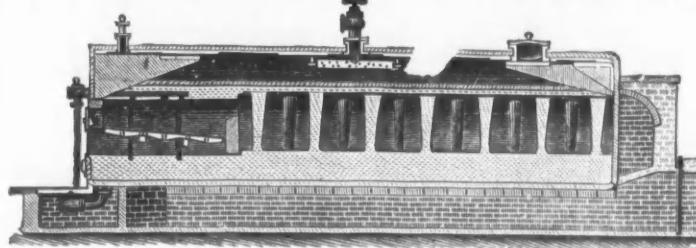
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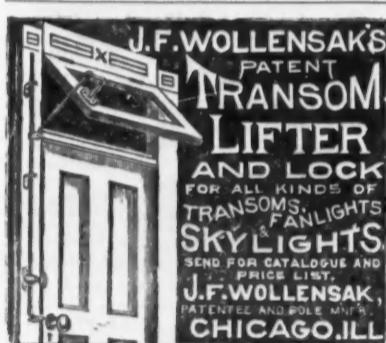
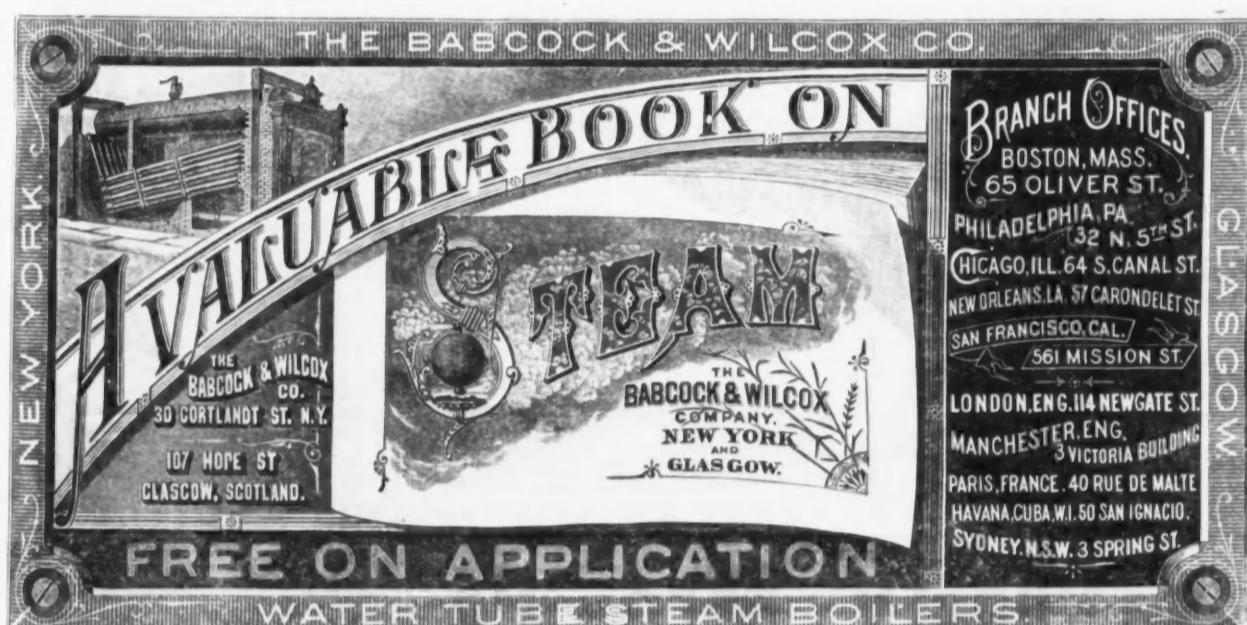


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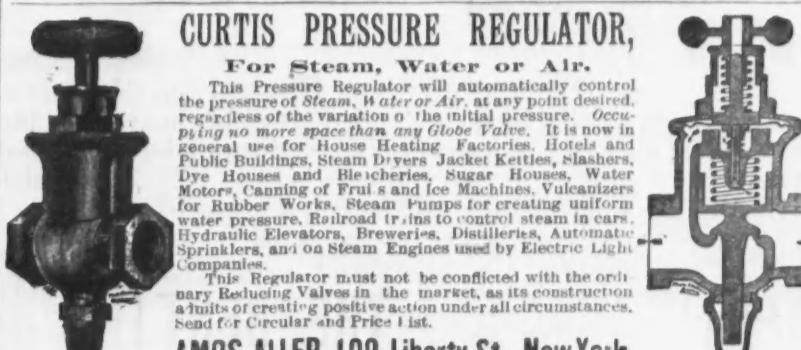
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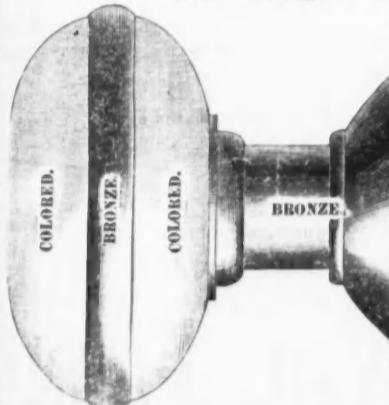
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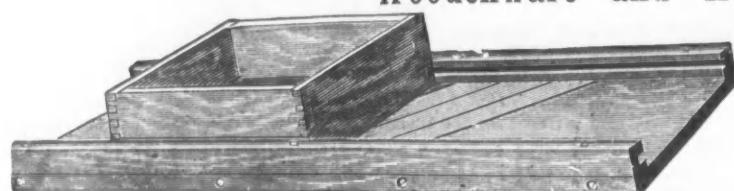
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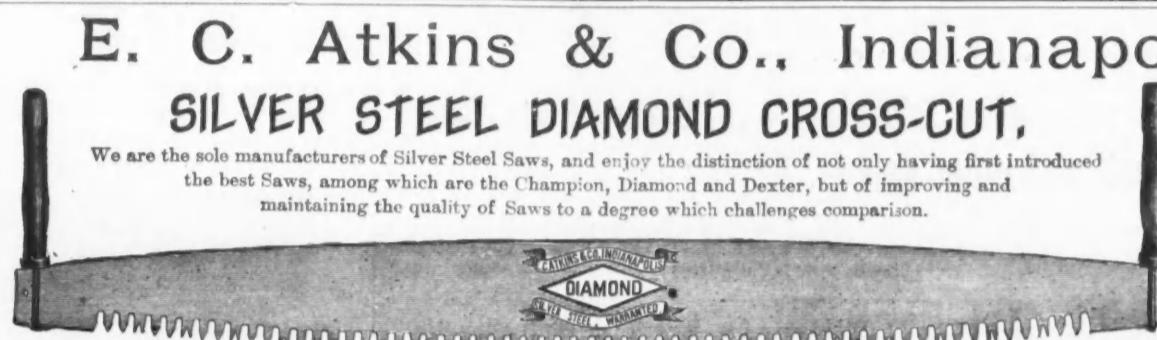
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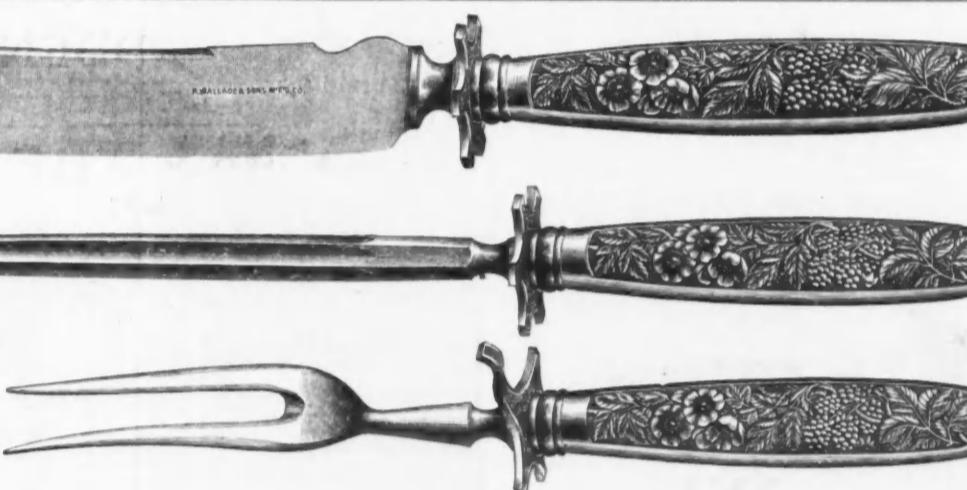
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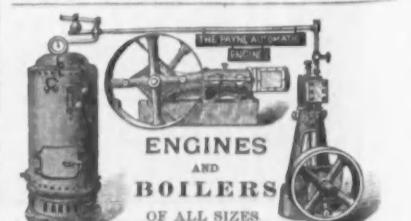
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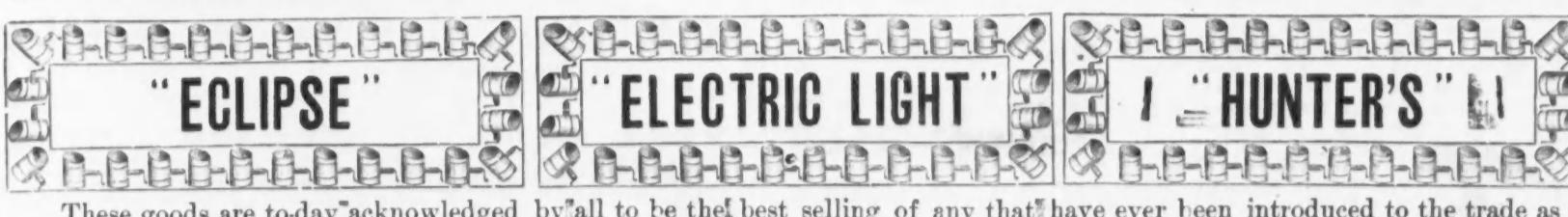
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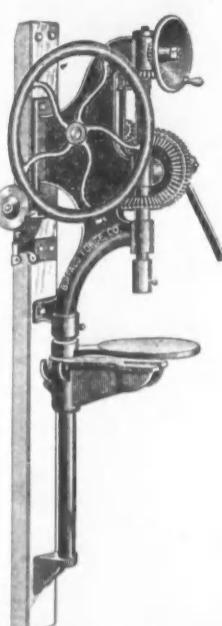
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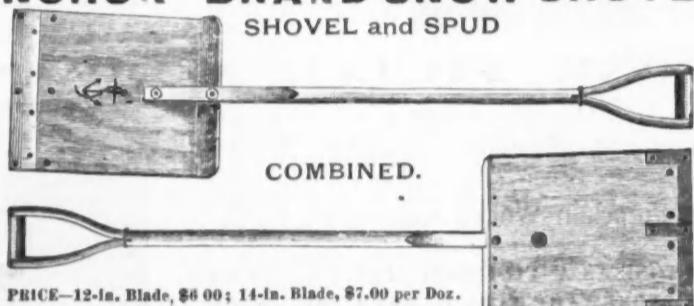


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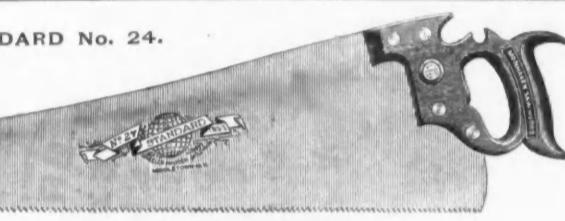
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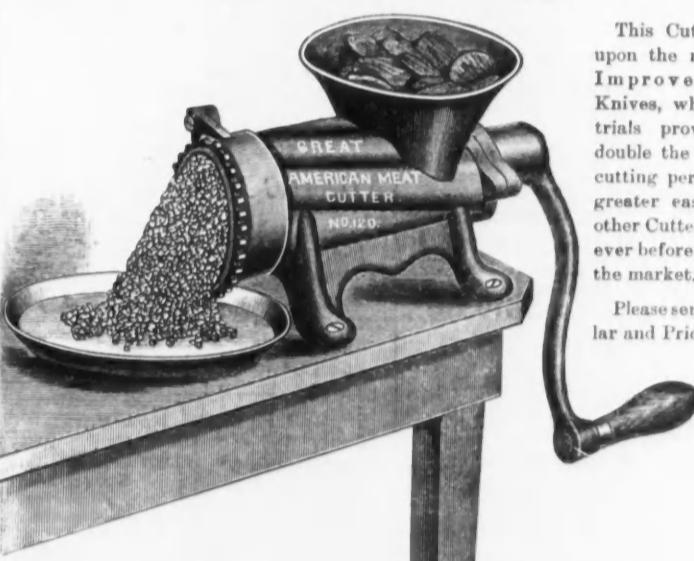


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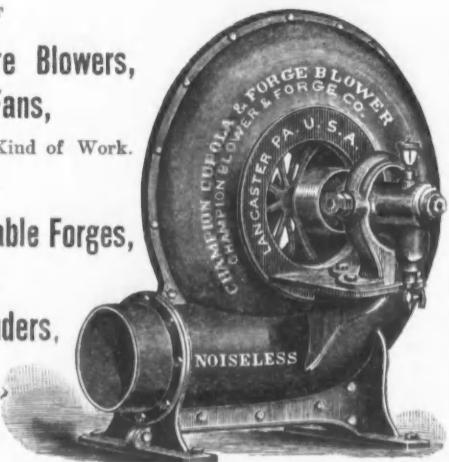
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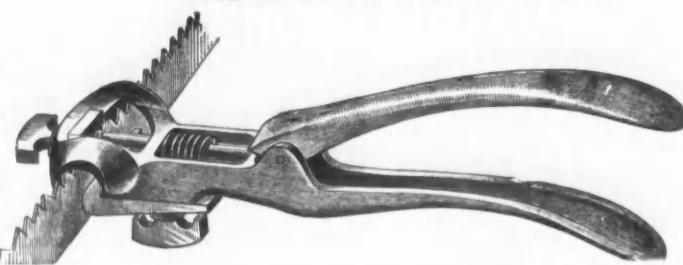
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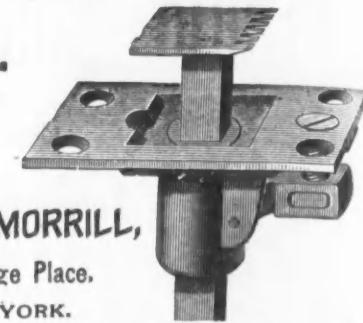
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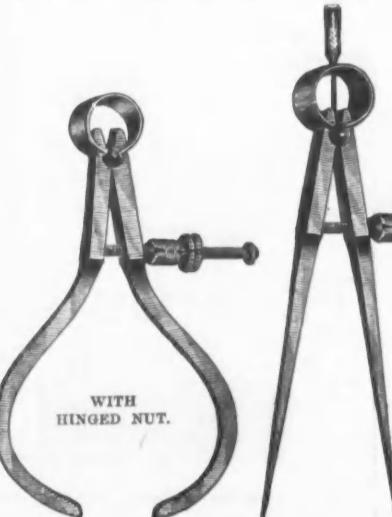
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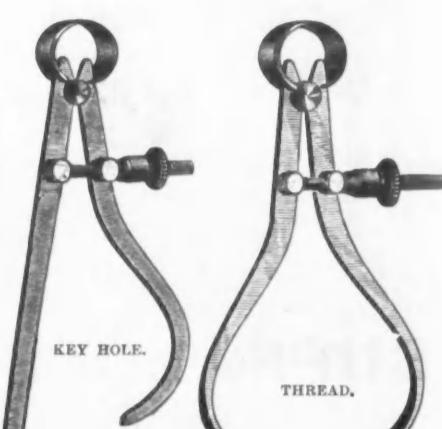
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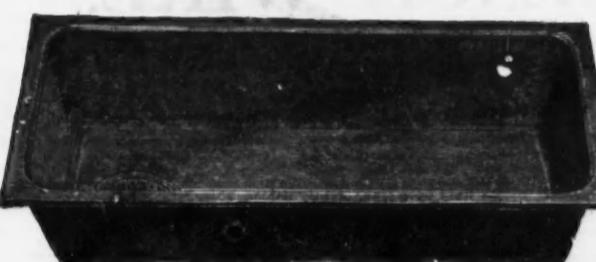
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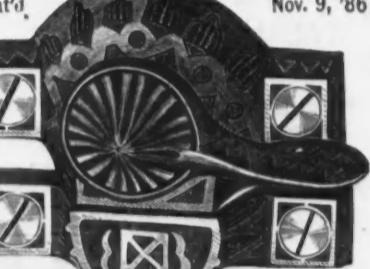
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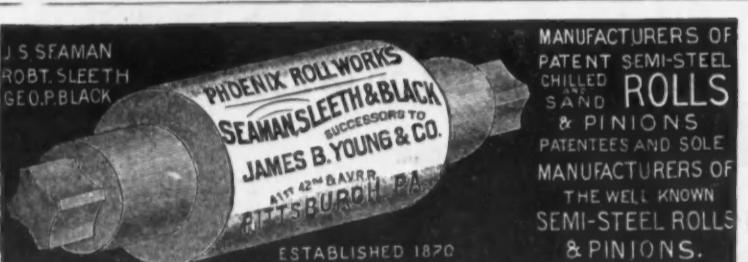
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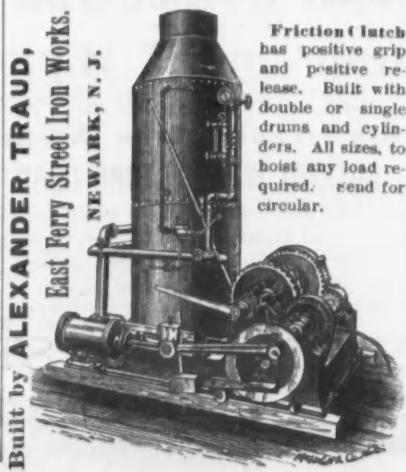
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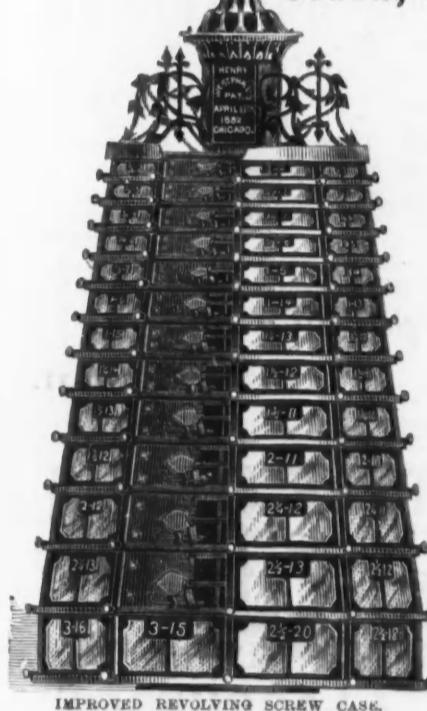
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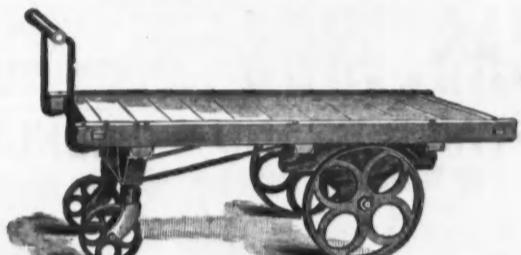
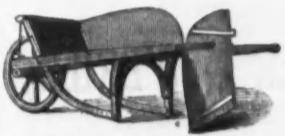
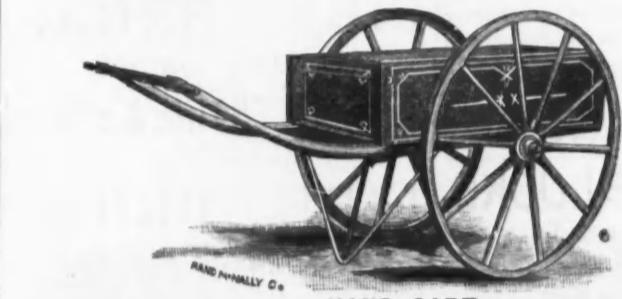
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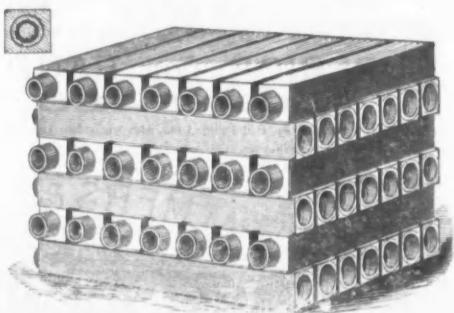
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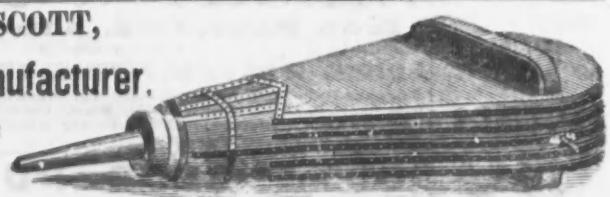
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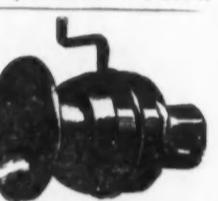
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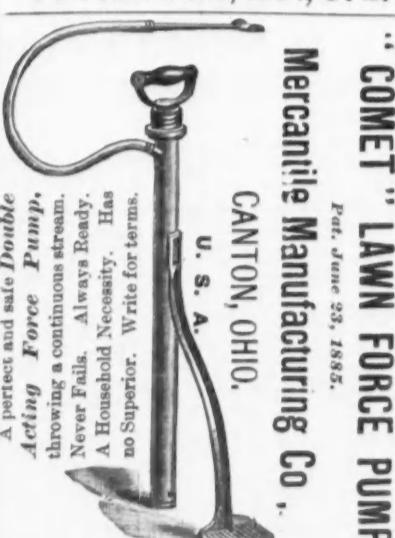
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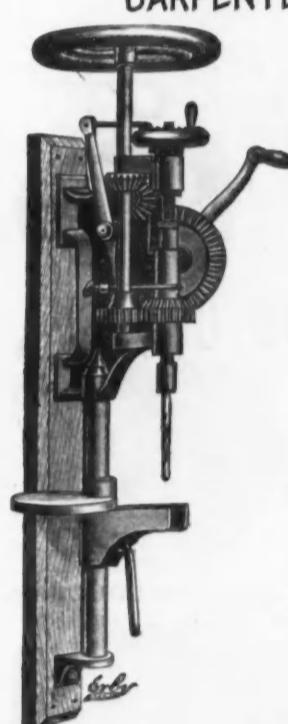
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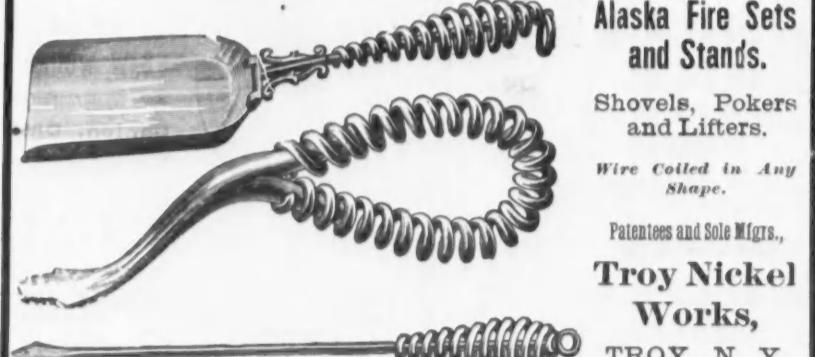
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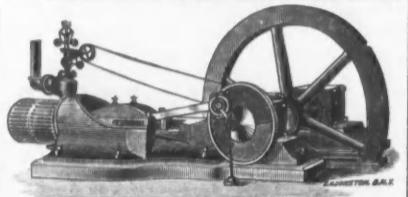
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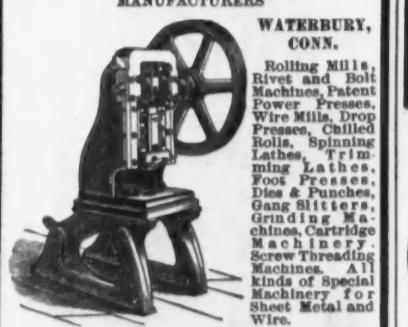
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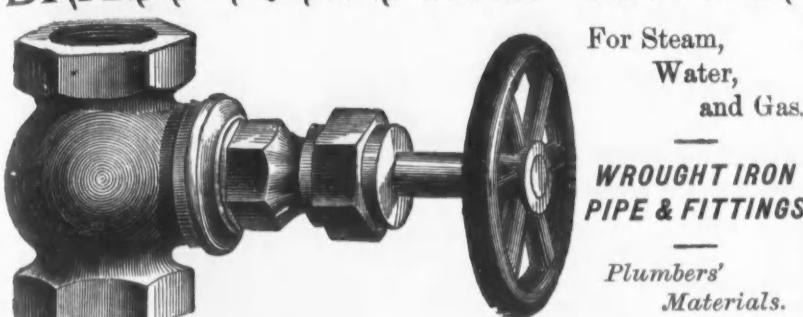
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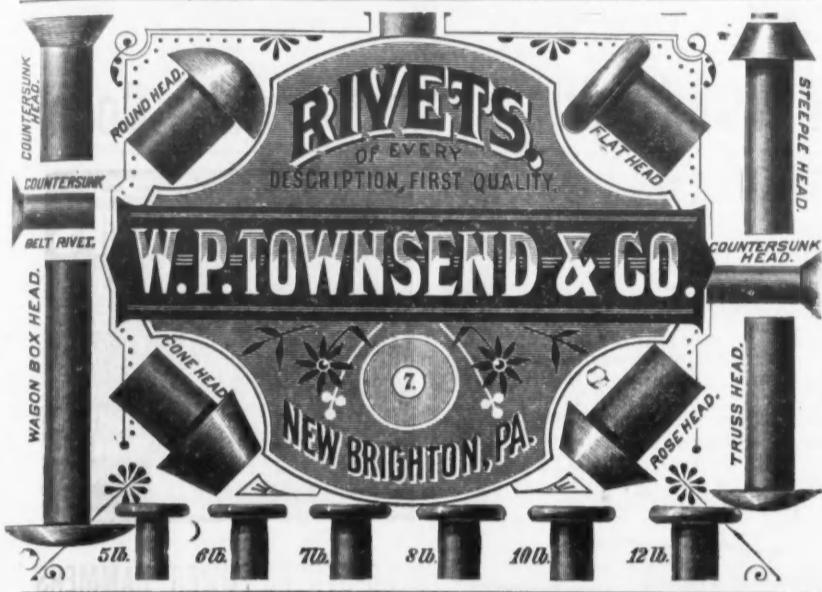


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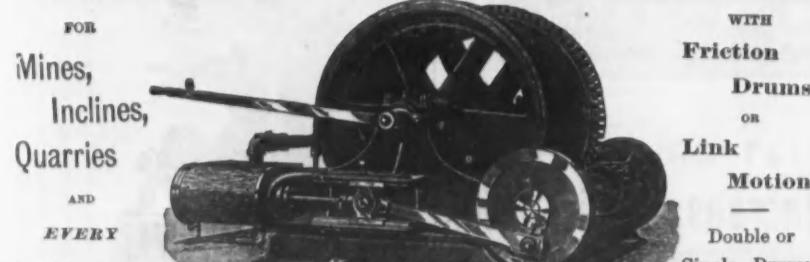
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Complete Hoisting and Mining Plants a Specialty.
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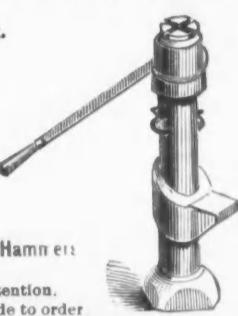
RICHARD DUDGEON.

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Maker and Patentee of the Improved

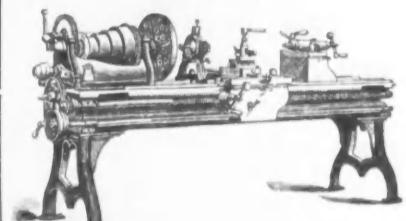
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Roller Tube Expanders and Direct-Acting Steam Hammer.

Communications by letter will receive prompt attention.
Jacks for pressing on Car Wheels or Crank Pins made to order.

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With Quick Return Motion.Engine Lathes, Planers, Boring Mills
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18,000 in use.

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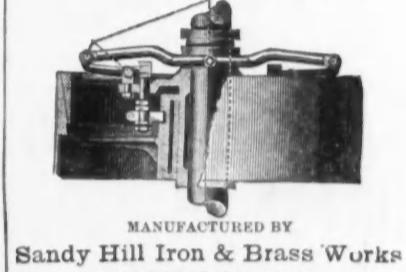
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THE CHAMPION

The best general purpose
Carriage Bolt for the
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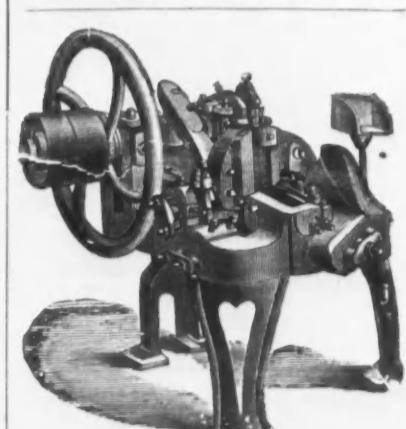
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Manufacturers of Nail and Spike Machines.

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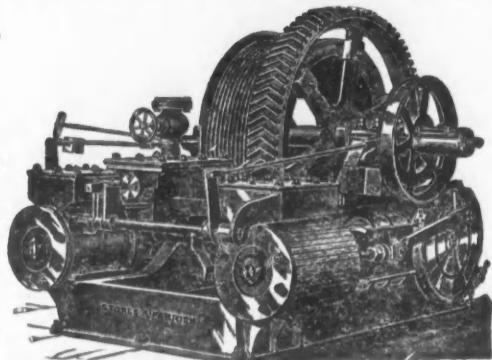
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ELEVATORS,

Passenger and Freight, Steam, Hydraulic and Belt Power.



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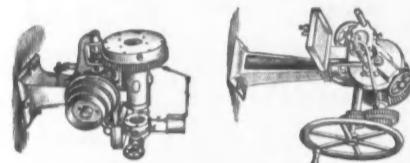
For Mines, Dock Use and Inclined Planes.

All kinds of Hoisting Machinery a Specialty.

BLAST FURNACE HOISTING ENGINES

With Vertical or Horizontal Cylinders for Handling Stock to Top of Stack with One or Two Platforms.

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"Eclipse" Pipe-Cutting Machines.

DID IT EVER OCCUR TO YOU?

That a Pipe-Cutting Machine in your Factory or Mill would save enough in labor and time to PAY FOR ITSELF very soon, besides enabling you to use up clean *all old pipe ends, &c., that are now wasted?* You may never have thought of this, but *it is a fact*, and will apply to establishments where the amount of Pipe used is *not very large*. If you are a regular Pipe-Fitter, you *cannot pretend to compete* with others in your line if you use common hand stocks and cutters, and it would well pay you to buy a Pipe Machine. The "Eclipse" Machine is now built in six different sizes, as follows:—

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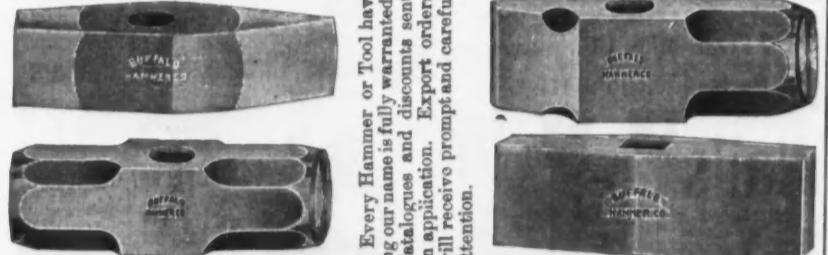
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EVERY BLOWER WARRANTED.

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Manufacturers of a full line of

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Every Hammer or Tool belonging to our firm is fully guaranteed. Catalogues and discount coupons will receive prompt and careful attention.

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October 13, 1887.

Machinery, &c.



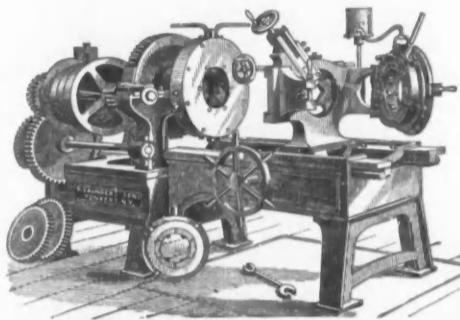
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JACKS,
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TAPPING MACHINES

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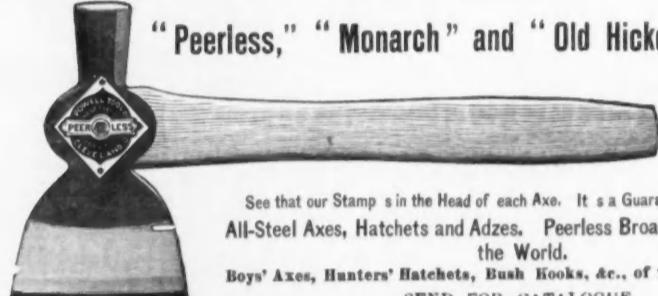
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IN ALL KNOWN FINISHES
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For Planing Links, Blocks and Circular Work, on ordinary
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Does Accurate Work.
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CLEVELAND CITY FORCE & IRON CO.,
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HIGH-SPEED POWER TRAVELING CRANES.

We are now prepared to build **High-Speed Power Traveling Cranes** for any capacity of load, any length of runway and any width of span, with one or with two trolleys on the bridge. These trolleys to work either slow or fast, together or independently, in like or in opposite directions, horizontally or vertically, while the bridge can be traversing slow or fast at the same time in either direction. The speeds of bridge on runway are 100 feet and 200 feet per minute; the speeds of trolleys on bridge are 50 feet and 100 feet per minute; and there are four hoisting speeds of 5, 10, 20 and 40 feet per minute; all can be varied quickly without the least shock or jar from zero to maximum or to any intermediate speed. The load is always automatically sustained, thus avoiding absolutely the great danger and anxiety which are inseparable from the use of those cranes which require the operator to apply the brake. We have had one of these Cranes of 26 ton capacity in constant use in our foundry for nearly two years and we offer them with full confidence for the greatest range of service. We invite the correspondence of parties interested in the subject.

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No Boiler, Coal, Ashes or Engine. Made in Sizes of 4, 8, 10, 15 and 25 H.-P.

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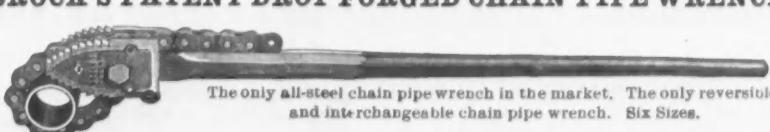
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PORTABLE DRILLING,

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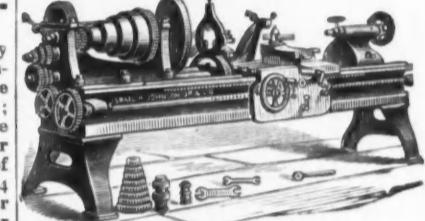
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MANUFACTURERS OF
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 Iron-Working
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Planers, with Quick Return,
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with Patent Brake, Double
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HOWARD IRON WORKS,

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Manufacturers of

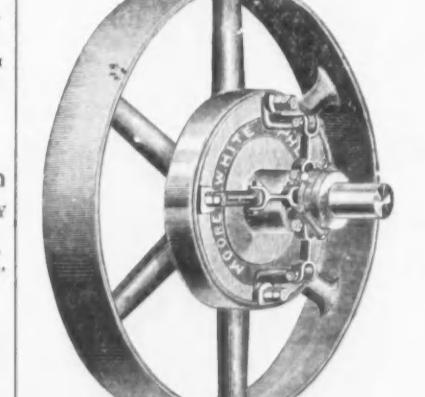
BOLT CUTTERS

AND NUT TAPPING MACHINES.

(Schlenker's Patent).

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Patent Friction Clutch,


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MOORE & WHITE,
1812 Buttonwood St., Philadelphia, Pa.
Send for DESCRIPTIVE & CIRCULAR and PRICE LIST

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Paul S. Reeves,
MANUFACTURER OF
GENUINE BABBITT METAL
AND ALL GRADES OF
ANTI-FRICTION METALS.

Special Notice.—We call attention to our new mixture, THE P. S. R. "SPECIAL HARD" BABBITT. Equal to genuine, at 20 per cent. less price. Has now been in use about one year and thoroughly tested.



ESTABLISHED:
Spring Making, 1842. Steel Making, 1845. Norway Iron, 1871 (Re-Rolled).

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MANUFACTURERS OF
Springs, Steel, Re-Rolled Norway
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ADDRESS:
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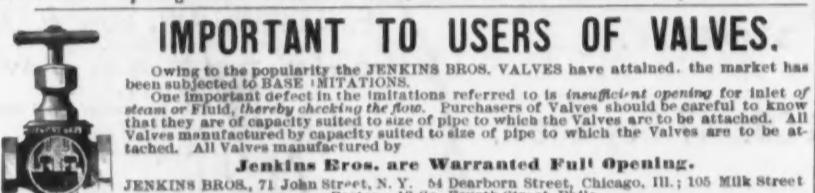
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Celebrated for its great strength and uniform quality. Especially adapted for use in the construction of Masonry, Foundations for heavy Machinery, Engines, Blast Furnaces and any and all Wet or Dry work requiring great strength and solidity. Used for the past ten years for the annual repairs of the Croton Aqueduct, New York; also for the new Aqueduct, the Mississippi and New York Harbor Jetties, New York and Brooklyn Bridge (at critical points), Hudson River Tunnel, new Albany Capitol, Lighthouse Dept. (Gen'l Duane in charge) and other prominent work.

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One important defect in the imitations referred to is *insufficient opening* for inlet of water.

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Jenkins Bros. are Warranted Full Opening.

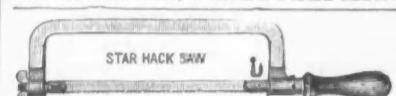
JENKINS BROS., 71 John Street, N. Y. 54 Dearborn Street, Chicago, Ill.; 105 Milk Street Boston; 13 So. Fourth Street, Phila.



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STEEL CASTINGS

A Substitute for Steel and Wrought Forgings.

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We are now Sole Agents for all of the Celebrated Star Saws, comprising

Star Hack Saws,
Star Bracket Saws,
Star Butchers' Saws.

The Star Hack Saw will cut Iron and Steel as other saws cut wood.

The Star Bracket Blades are so good that they command nearly all the Bracket Trade of this country, and have a large foreign demand.

The Star Butchers' Saws will cut twice as long without filing as any other saw in use.

None of these Star Saws are to be filed, as the price is much less than the cost of filing.

Hack Saw Blades, 8 in. \$0.65 per dozen.
Butchers' Saw Blades, 24 in. 1.00
Bracket Saw Blades, 200 to 7. 1.00 per gross.

Usual Discount to Dealers.

MILLERS FALLS CO.,
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Labor Saving Tools.



LIGHTNING & GREEN RIVER SCREW PLATES.

Bolt Cutters, hand and power. Drilling Machines, Punching Presses, Tire Benders, Tire Upsetters and other Labor Saving Tools. Send for Price List.

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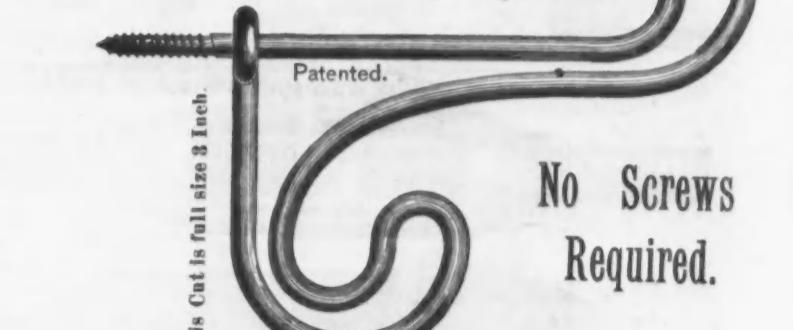


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